NutraSolutions

Heart Health Research
page NS3

April 2007

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DEVELOPMENT TRENDS & TECHNOLOGIES FOR FORMULATORS & MARKETERS

Analyzing Bars
page 17

Gluten-free Regs
page 31

The Cuban Culinary Experience
page 53

Texture & Shelflife
page 61

Formulating for Sweetness
page 75

R&D Seminars—Meals
page 87

Make Plans Now!
2007 New Products Conference
page 94-97

FREE Webcast on Omega-3s
page 93

Going East

Asian Fare's Foodservice Evolution

page 10

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table of contents

Cover photo by TJ Hine

Cover story: Zenspiration

10 Asian cuisine has had a banner year in non-Asian restaurants. To stay competitive and increase the popularity of Asian foods, chefs can look to current trends and new ideas to get customers truly "zenspired."

new product trends

8 Hitting the Shelves
New sprays make flavoring even easier; Sunchips go sweet; peanut butter and jelly get a nutritious lift; healthier processed foods.

17 Cereal Bars and Breakfast Foods
As the outlook for cereal bar growth blurs, the future hinges on hitting ample target markets with relevant, multi-dimensional products.

23 MarketWatch
Calorie-conscious portions in snack foods; a drink for the morning after; Dean Foods' no-clone zone; a new energy drink with a Biblical twist; donuts jump on the whole-grain bandwagon.

31 Regulations: Land of the Free
New definitions for "gluten-free;" the safety of fresh produce.

33 Protecting Assets
Recall policies help with brand protection as well as liability.

culinary creations

53 Cuban Cuisine: On Trend and Coming Fast
Cuba's eventual change in government will dovetail with the red-hot interest in Hispanic foods. Because of unique political circumstances, Cuban fare has resisted "culinary drift," making it a "pure" Caribbean cuisine.

59 On the National Menu
Southwestern foods hit QSRs for breakfast; egg rolls take on new roles.

ingredient challenges

61 Controlling Texture for Shelflife
Preventing moisture loss in foods is one key to longevity. Gums, starches, emulsifiers and proteins assist with texture in ways where the mechanism is not always commonly understood.

75 Sweetening Functional Foods
Sweetness remains a key desirable trait in many foods and beverages. Formulation options range from unusual natural alternatives to tried and true food additives. The total sum of their properties in a finished product is a crucial consideration when employing them.

87 R&D Applications Seminar: Prepared Meals That Please
Attendees of *Prepared Foods*' 2006 R&D Seminar gathered information on flavor trends, how to use mushrooms to make products more attractive, how raisins can enhance food safety and quality and the culinary benefits of chicken broth.

r&d applications

98 R&D Applications: Healthy Bread Flavors

99 R&D Applications: Body-building Pizza

100 Abstracts: Service matching technical challenges and solution providers; top 10 flavors and fragrances; hot new product trends; new product innovations of the year and more.

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NS3 Heart Health Research
Research supports the "heart health" benefits of many ingredients, but consumer awareness is crucial. From vegetables to omega-3s to certain antioxidants and vitamin K, a plethora of ingredients can provide customers options for a "heart healthy" lifestyle.

NS13 R&D Applications: Viscosity: Good for Heart and Waistline

NS15 NutraNews

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Taking Control

Prepared Foods Welcomes New Staff Member

As part of *Prepared Foods*' continuing efforts to enhance its services to the food industry, Michael Leonard has joined its staff as director of business development, effective March 12, 2007. In his new position, Leonard will be responsible for *Prepared Foods*' national and international sales efforts and for identifying and implementing new opportunities to serve its advertisers.

Peter N. Havens, group publisher of *Prepared Foods*, says, "We are very pleased to have Mike join our team. His skill set includes working effectively with customers based on his broad and deep knowledge of our industry. His creativity and customer-centric style will be highly valuable in integrating our total market offerings of magazines, events and digital products."

"*Prepared Foods*' stable of publications and events offers a uniquely exciting opportunity to assist our advertisers in finding more creative and integrated means to market their products," says Leonard. Leonard has extensive food industry experience, starting his career with *Prepared Foods* at Gorman Publishing, followed by 16 years at *Food Product Design* as well as serving on the board of directors for the Research Chefs Association (RCA).

Prepared Foods is in the midst of a strong growth surge, with ad page increases over the last three years, making it the leading R&D magazine in its industry. In addition, it has diversified its services to the industry with the launch of:

- ProductInnovationXchange (PIX), a strategic, senior-level, product development sales event.
- R&D Applications Seminar, a classroom-style event dedicated to educating the industry's bench-level formulators.
- An aggressive expansion into digital media with the e-Learning Center and the industry's most-highly visited websites, PreparedFoods.com and FoodMaster.com.

Michael Leonard may be reached at leonardm@bnpmedia.com or 630-694-4024.

BNP Media is the publisher of *Prepared Foods* and *NutraSolutions* magazines, Food Master/FoodMaster.com, New Products Conference, R&D Applications Seminar, ProductInnovationXchange (PIX), e-Learning Center and PreparedFoods.com.

This month's Market Watch column details the efforts of a couple more companies to add 100-calorie-portioned products to their respective lines. This rush to downsize is nothing new, of course. At various times, manufacturers reformulated their products to reduce calories, fat and carbohydrates, but the 100-calorie pack efforts have seen a different approach. Despite a few exceptions (notably Kraft with 100-calorie versions of Oreos and Chips Ahoy cookies), these products have simply been portion-controlled versions of existing items, with little to no reformulation. Coke, for example, offers 100-calorie mini-cans of Coca-Cola Classic, Sprite and Cherry Coke in 8oz cans.

This leads to an interesting prospect: what if this phenomenon, like the carb-cutting craze before it, ventures over to the foodservice side of the business? Are consumers likely to embrace a 100-calorie version of, say, a Big Mac? At 540 calories for the full-size sandwich, that would mean a sandwich a fifth the size of what consumers now enjoy, little more than a couple of bites for the McDonald's "super-heavy" (company lingo for often-repeating) patron. For the record, Burger King would have to make an even more drastic reduction to its 670-calorie Whopper.

Admittedly, these hamburgers are designed as a meal and not a snack like many of the 100-calorie retail products. However, the notion of portion control is creeping into foodservice. T.G.I. Friday's new Right Portion, Right Price menu features six entrées priced between $6.99 and $8.99. It is interesting to note that this menu is featured concurrently with the chain's "Better for You" menu section, which lists items with 500 calories or less and 10g or less of fat per serving. (Two Right Portion, Right Price options are in both areas: Dragonfire Chicken and Shrimp Key West.)

Expect more such moves in the future, as restaurants and their suppliers realize they are the next target of one of the more-influential public interest groups. The Center for Science in the Public Interest (CSPI) has accused "many" restaurant chains of promoting "extreme eating" by offering items containing "a whole day's worth of calories in a single dish, or several days' worth in the whole meal," yet not disclosing those nutritional facts to their consumers.

If suppliers and restaurants work together to create and aggressively promote smaller, more nutritious menu items, they could well beat the CSPI to the punch, prevent federal regulations requiring menu labeling and, most importantly, benefit the consumer. PF

William A. Roberts, Jr.
Business Editor
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Hitting the Shelves

A Spray Away

The spray concept is not a new idea in the retail food industry. Butter-flavor sprays suitable for both cooking and baking hit the market years ago, and manufacturers have applied even more innovation to the concept since. Introductions such as Unilever BestFoods' Salad Spritzers allow consumers to sufficiently flavor salads to suit individual tastes without fuss and product waste.

Now, David Burke's Flavor Spray allows for an even more individually tailored dining experience for consumers. This extensive collection of sprays includes everything from classic and exotic flavors (like tomato basil and teriyaki) to sweet and fruity flavors (including marshmallow and mango). The FDA-approved line is free from fat, calories, cholesterol and carbs, making it easily adaptable to any specific diet plan. The sprays can eliminate the need for toppings, dressings, gravies and sauces for a variety of meal occasions.

Peanut Butter Jelly Time!

Considered timeless in the U.S., peanut butter and jelly sandwiches have been a treat for children and adults alike for decades. The two flavors paired together have a classic taste and have been seen in the consumer packaged goods industry in various formats.

In 1999, J.M. Smucker launched its Uncrustables, a sealed and frozen crustless sandwich filled with either strawberry or grape jelly and peanut butter. Now, the flavor combo can be found in VitalNRG's latest nutritious snack. The Jojo Bar is a gourmet bar made from raw ingredients including organic peanuts and cranberries. Bearing the tagline "Healthy living begins with real food," the product is free from wheat, gluten, artificial preservatives, sweeteners and trans fat. The Jojo Bar was created totally void of high-heat processing, which some contend can ruin healthy nutrients found in food.

Sweet Ambitions

Frito-Lay's Sun Chips are known for multi-grain ingredients and savory flavors such as Harvest Cheddar and Garden Salsa. The brand has been experimenting with different approaches in the U.S. recently, including a 100-calorie pack option and, more recently, a limited-edition variety. The latter is in the form of a new effort to incorporate sweet flavors into Sun Chips, traditionally known for savory profiles. Cinnamon Crunch is the first sweet attempt for Sun Chips since 1999, when Apple Cinnamon and Honey Nut varieties were launched. The new Cinnamon Crunch version claims to blend the line's signature multi-grain taste with sweet cinnamon.

Raising Awareness

Amid rising concerns over obesity and closely related heart health, organizations and manufacturers are launching initiatives to promote health awareness and good eating habits. Campaigns are even targeting children to further reduce the onset of obesity and heart disease. The Child Nutrition (CN) Labeling Program, for instance, is a voluntary federal labeling venture to promote nutritious meals and snacks to children. The CN initiative is conducted by the Food and Nutrition Service (FNS) of the USDA.

One product touting the CN label is from Eden Valley Farms—Smart Bites Oven Bake Chicken Nuggets. Made from 100% breast meat, these chicken nuggets are trans fat-free and low in fat and sodium. The packaging suggests that the product be baked instead of fried. Consumers should expect to see an increase of similar products in coming months.

Part of the Processed

Of late, natural products have displayed strong growth in the consumer packaged goods industry, especially in food and beverages. In the U.S. alone, the retail sector of the natural products industry recorded sales of $41.5 billion in 2005, according to Mintel's "2006 Natural Products Marketplace" report. The common claims associated with this trend are all natural, organic and no additives/preservatives (as the products are minimally processed, environmentally friendly and free of artificial ingredients and chemicals). As cited in the chart below, these three claims were associated with over 5,500 products in 2006, according to the Mintel Global New Products Database (GNPD). This growth could be due in part to consumers actively seeking wholesome lifestyles, which results in the purchase of natural products—from household items to consumables.

Another contributing factor to these products' popularity is the obesity epidemic. Few topics in recent years have received as much national and even global attention as obesity. The issue has broad outreach, as it affects not only adults, but also young people. In the case of children, the significant attention to childhood obesity has ignited major movements, beginning with meal programs and environments in schools—for instance, the new practice of reporting students' body mass scores to parents in select states, as reported in the *New York Times* (January 2007). These "report cards" intend to warn and/or educate parents about their child's potential weight problems.

In the home, lack of time is a subtle factor in the obesity struggle, as it affects shopping habits, eating habits and regimens. Manufacturers have presented preliminary solutions by launching healthier meals on the go, such as the Smart Bites chicken nuggets.

Expect a greater availability of these types of products in mainstream channels, including supermarkets and mass merchandisers. Wal-Mart, for instance, expanded its collection of organic packaged foods to now include milk, fruits and vegetables. According to a Food Marketing Institute (FMI) study, 50% of supermarkets are experimenting with natural and organic formats.

Natural Order

New Products by Claim, 2006 vs. 2005

	2006	2005
All natural	2,155	1,653
Organic	1,612	1,331
No additives/preservatives	1,781	1,023

Source: Mintel Global New Products Database (GNPD)

GlobalTrends

With the New Year, "new you" campaigns are all over the media; consumers attempt to lose the weight gained during last year. Daily-dose yogurt shots are a convenient way to improve consumers' diets. In the Netherlands, Campina released a yogurt drink under the Campina Optimel Control brand. Prepared with skimmed yogurt and sweeteners, this functional dairy drink contains fractioned vegetable oil (made of natural plant extracts) that suppresses the appetite. This ingredient has been seen in yogurt drinks, but it is interesting to see it in a mainstream brand, which is also part of the "Ik Kies Bewust" campaign (for healthy and balanced eating, as well as informed consumer nutrition).

Similarly, in Ireland, Glanbia Consumer Foods released Lose Weight Health Shots under the Yoplait Essence Lose Weight brand. This product provides a concentrated boost of natural milk calcium that claims to enhance weight loss when dieting. Information on the package claims the product gives "272mg of calcium to increase intake to levels shown to lead to significantly increased fat loss, when combined with a reduction of 500 calories in your daily diet." Interestingly, the product does not promise weight loss in itself, but it is to be used in conjunction with a calorie-controlled diet.

In Japan, Kirin (with its beer manufacturing expertise) and Yakult (with its world-renowned research on probiotic bacteria) worked together to launch Bbcube under the Kirin Well-Foods brand. These crispy cubes contain Yakult's bifidobacteria and Kirin's beer yeast dietary fiber, which supplement each other for healthy gut flora. The cubes are individually wrapped to protect the bifidobacteria from oxygen.

Traditionally, sake is served warm, but in the last 40 years or so, sake has become a more refined drink due to advances in production techniques for cooler drinks. However, Godo Shusei in Japan has introduced Kunpuku Blowfish Fin Sake, which sticks to the traditional warm-serving style. Interestingly, it comes in a self-heating pack not unlike some on-the-go coffee cups or soups and takes three to five minutes to heat. The pack also includes a slice of dried blowfish fin, added to give the drink an authentic, traditional flair.

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Zenspiration

Asian cuisine has seen its best year yet in terms of placement on menus in non-Asian restaurants. In order to stay competitive and even increase the popularity of Asian foods, chefs can look at some current trends and new ideas to give customers truly "zenspired" new choices.

Maria Caranfa, Mintel Menu Insights

The American restaurant menu has been "zenspired" by Asian cuisine. Asia's size and population allows Asian menus to have a wide range of possibilities, ranging from the spicy curried dishes of the southern regions to fresh, artistic sushi from the Far East. Asian food was introduced to the U.S. in the mid-1800s; it rose in popularity due to its exotic appeal. The same appeal still attracts consumers today, and it has contributed to the mass popularity and evolving innovation of Asian cuisine.

Growing Popularity

There is no denying that Asian cuisine has now become as popular as a burger and fries. According to Mintel Menu Insights, Asian cuisine is the third most popular cuisine type on the restaurant menu, comprising close

Many of the mentioned restaurants have sushi or sushi-like items on multiple dayparts. Numbers represent total sushi or sushi-like dishes on the menus. Some of the restaurants are based solely on sushi. Other restaurants are "on-trend" and are adding sushi or sushi-like dishes to their menus. These restaurants are adding sushi dishes to the appetizer menu—a fresh way to start a meal.

Thinking Fresh

Top 10 Restaurants Serving Sushi or Sushi-like Dishes, Q1 2006 through Q4 2006

Restaurant	Q4 2006	Q3 2006	Q2 2006	Q1 2006
Inagiku	125	125	125	125
L & L Hawaiian Barbecue	98	89	89	64
Benihana	71	71	70	70
I Love Sushi	64	64	64	64
Riingo	59	59	69	60
Matsuhisa	49	49	49	49
Upstream	48	48	48	48
Johnny Chan	33	33	33	33
Anzu	30	27	25	25
Abacus Restaurant	22	22	20	20

Source: Mintel Menu Insights

to 900 menu items and found on 30% of the country's leading chain restaurant menus. Asian cuisine is at an all-time high in popularity, and it shows no signs of slowing down!

Asian cuisine has seen continuous growth on restaurant menus. Mintel reveals that every type of dining segment experienced growth in Asian cuisine last year. Quick service restaurants (QSR) had the most growth with the addition of almost 200 Asian menu items. McDonald's is just one of the QSRs that expanded its menu with the flavors of Asia. In 2006, the company added the Asian Chicken Salad made of crisp greens, warm orange-glazed chicken, snow peas, edamame, Mandarin oranges and toasted almonds with Newman's Own Low-Fat Sesame Ginger dressing. The QSR market is closely followed by fine dining, casual dining, family/midscale and fast casual markets in overall new Asian menu introductions.

The appetizer menu category displayed the most growth in Asian dishes in the past two years. While lettuce wraps and spring rolls have become appetizer staples, some restaurants are getting a little "Zenspiration" from innovative Asian creations. T.G.I. Friday's added Zen Chicken Potstickers stuffed with minced chicken and vegetables, served with a sweet and tangy Szechwan dipping sauce. Claim Jumper offers premium Center-cut Sashimi Grade Seared Ahi served with ginger-onion Mirin dressing and Japanese slaw. In the same vein, New World Grill offers Korean BBQ Sticks with sweet roasted onions.

Fresh Surprises

Japanese cuisine has been identified as the segment that experienced the most growth of any Asian cuisine type. Who would have thought that the American palate would accept eating raw seafood? Sushi was mainly the item that contributed to the growth of Japanese cuisine. Surprisingly, sushi has grown into one of the nation's favorite Asian foods. Its popularity stems from its healthy reputation, high level of freshness, perception of sophistication and exoticness. All of these claims are now extremely popular with American consumers. This could mean increased growth in this arena. Sushi's appeal also led to more sushi-inspired dishes such as seafood carpaccio and sashimi-grade seafood to appear on menus.

Sushi's growth is attributed to restaurants such as L&L Hawaiian Barbeque and Upstream; both added sushi menus to their restaurants. Roy's, McCormick and Schmick's, and Bonefish Grill are just a few restaurants that also contributed to the growth of the item by adding both sushi and sushi-inspired items like Ahi Tuna Sashimi, Peppered Tuna Sashimi, Green Dragon Roll and Salmon Skin to

their menus. Sushi has tapped into Americans' growing taste for fresher, diverse and more creative Asian food.

Sake It to Me!

The popularity of Japanese cuisine also heightened the use of sake in food and beverages. Sake is an emerging ingredient in Asian cuisine and is quickly gaining popularity. Mintel reveals that sake is being used in sauces and as a marinade in a host of new Asian dishes. Upstream combined several traditional Asian flavors in its Sake Marinated South American Sea Bass with lobster dumplings, bok choy, shiitake mushrooms and shiso-mirin broth. Legal Seafood marinated its Alaskan Butterfish in a mixture of sake and soy sauce, drizzled with wasabi cream and ponzu soy garnished with seaweed salad. Roy's has used sake in its Shiso Green Tea Seared Kona Kampachi Sashimi served with sake-marinated grapefruit and plum wine sauce.

The cocktail menu also has been inspired by sake, as it appears more and more. Mixologists are taking advantage of the clean, cool taste of sake and creatively combining it with Asian flavors to create irresistible cocktails. Sake is being combined with the refreshing flavors of cucumber, ginger, watermelon, raspberry and lychee, among other fresh fruits. Basil's serves a Sakitini with Nigori sake and lychee puree. Hawthorne Lane created a Sake Mist made of cucumber-infused vodka muddled with ginger, shaken with sake and served up with fresh cucumber. For a sweeter flavor, P.F. Chang's mixed a Red Dawn Martini by combining Cointreau and raspberry sake with a splash of cranberry.

Deeper Exploration

With Asian cuisine at the height of popularity, analysts predict that Latin food will be the next big thing. As consumers look to satisfy their adventurous palates, restaurants may need to explore new Asian flavors and cultures in order to offer fresh American menu items.

Offering new and exotic flavors is one way for Asian cuisine to stay innovative. New flavors will provide a renewed level of glamour to Asian cuisine. Mintel's research shows that Asian menu items are using more lemongrass, curry, plum, shiso and yuzu. Menus also are being peppered with traditional Asian spice blends of sambal, tamari and togarashi. The Cheesecake Factory offers an Ahi Carpaccio—thin slices of raw Ahi tuna, wasabi pesto, creamy avocado and Togarashi aioli. Roy's created a Shiso Leaf Crusted Day Boat Sea Scallop dish accented with a yuzu-soy vinaigrette. Roly Poly added a Thai Hot Tuna Wrap filled with tuna salad, cheddar cheese, spicy Thai sauce, avocado, lettuce, tomato, sprouts and mango chutney.

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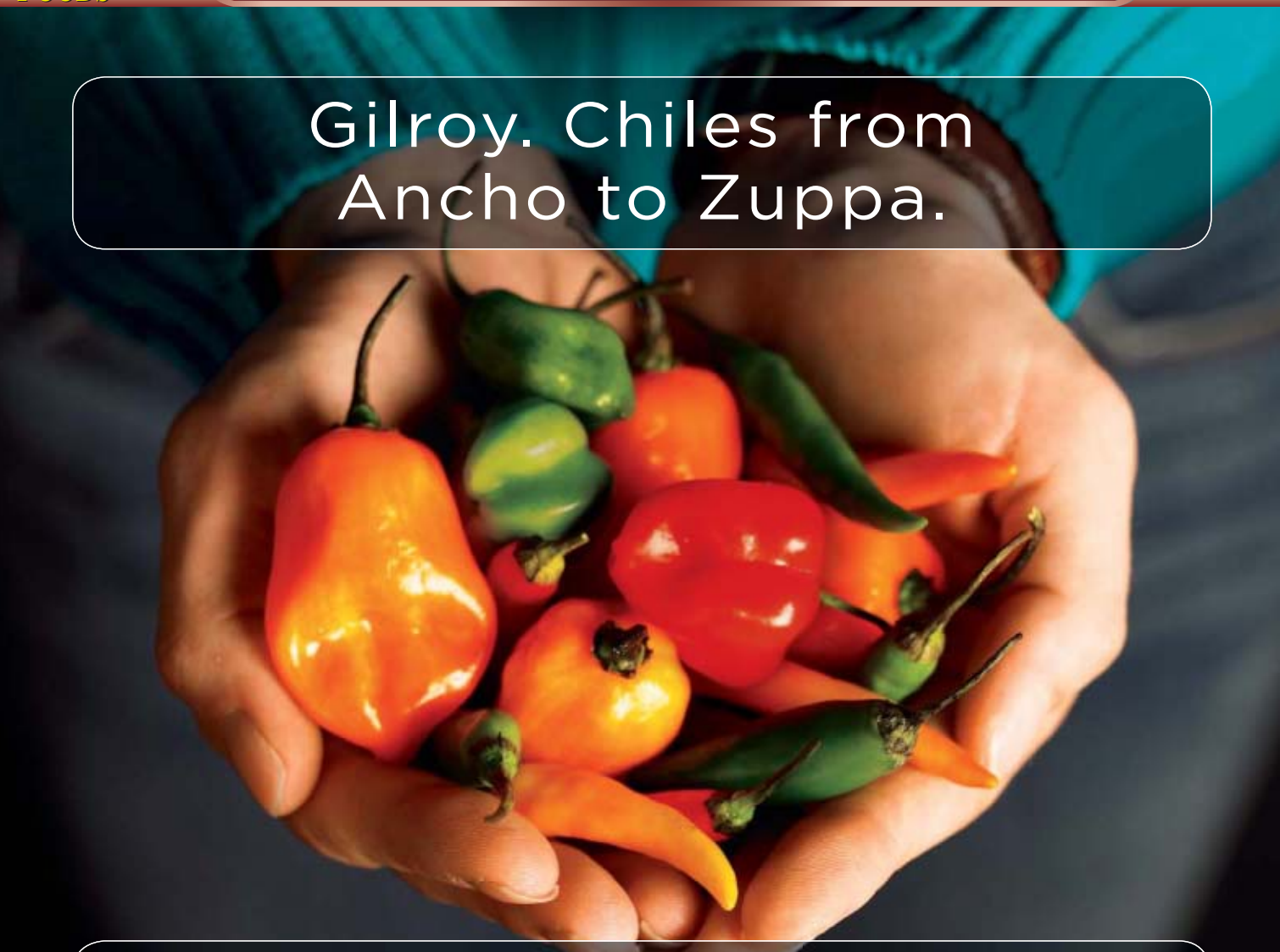

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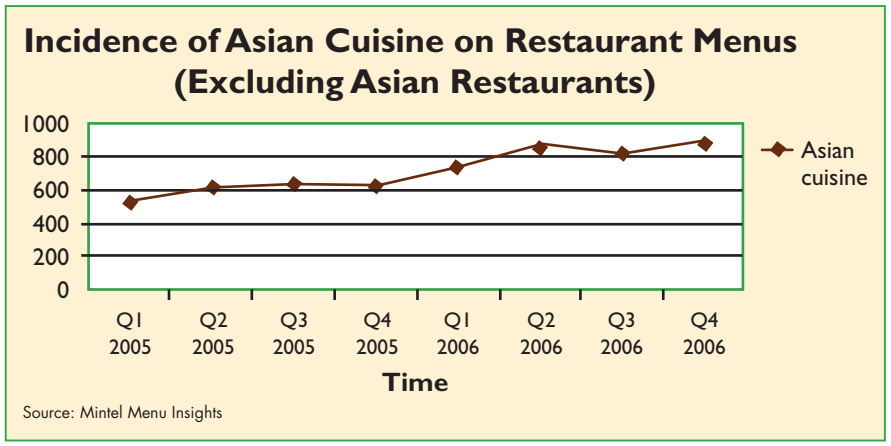

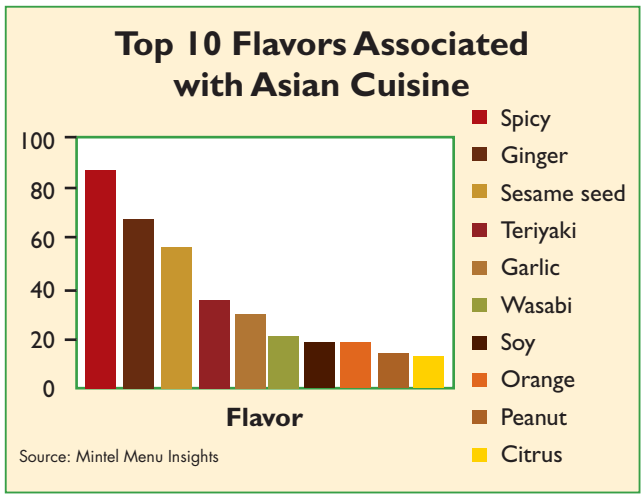

In order to present colorful new flavors on the menu, restaurants may need to break typical expectations of Asian cuisine and explore more traditional and regional Asian flavors. Japanese and Thai flavors became popular in 2006. However, new Asian varieties such as Indian, Vietnamese and Korean are waiting to be expanded on national menus. California Pizza Kitchen recently added an Indian-inspired Mango Tandoori Chicken Pizza made with grilled Tandoori chicken, mango, mild onions, red peppers and mozzarella cheese on a spicy golden curry sauce, topped with fresh cilantro and a sweet mango chili sauce. The Cheesecake Factory offers a glimpse into the potential of Vietnamese cuisine with its chilled Vietnamese Shrimp Summer Rolls made of delicate rice paper rolled around asparagus, shiitake mushrooms, carrots, rice noodles, green onion, cilantro and shrimp. Korean food is currently the least explored Asian cuisine across all menus, but there is room for the growth of innovative Korean dishes on mainstream menus. New Asian cuisine introduces diners to unfamiliar parts of Asia, tapping into the consumer's sense of adventure. pf

Mintel Menu Insights, a part of Mintel International Group, is a key resource for analyzing trends in the U.S. restaurant industry. The database tracks menu trends and innovations from the 350 largest chain restaurants and 150 independent restaurants, also featuring the nation's top 50 chefs. Trends are reported quarterly, offering insight into pricing, menu items, ingredients, preparations and entirely new menus. For more information, visit www.menuinsights.com or contact Mintel International at 312-932-0600.

Website Resources:

www.PreparedFoods.com — Type "Asian cuisine" into the search field for more articles on Asian foods

www.menuinsights.com — A searchable database that tracks flavor trends via chains and restaurants

http://asiarecipe.com/ingredients.html — A guide to Asian ingredients and cooking techniques, with photos

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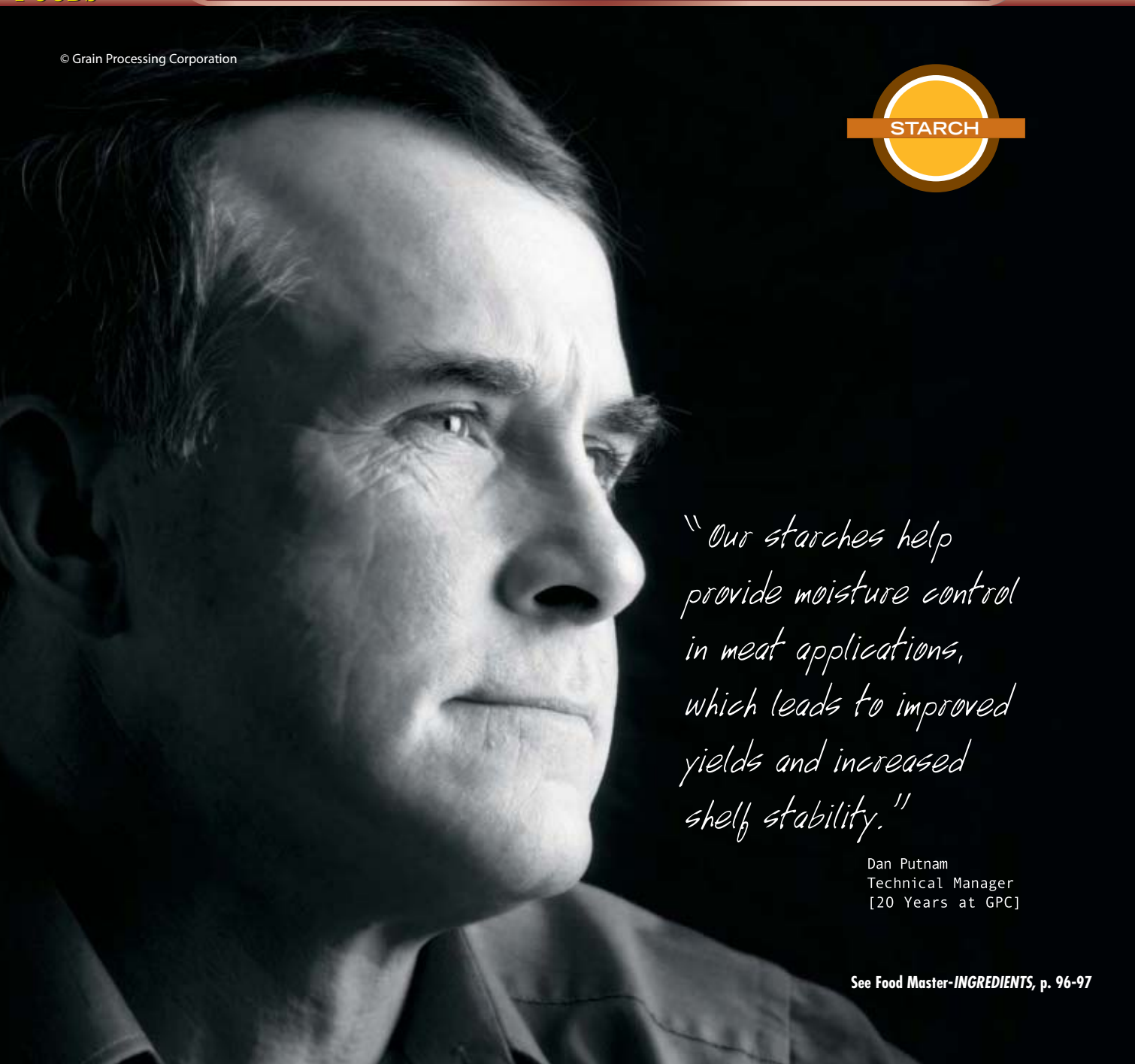
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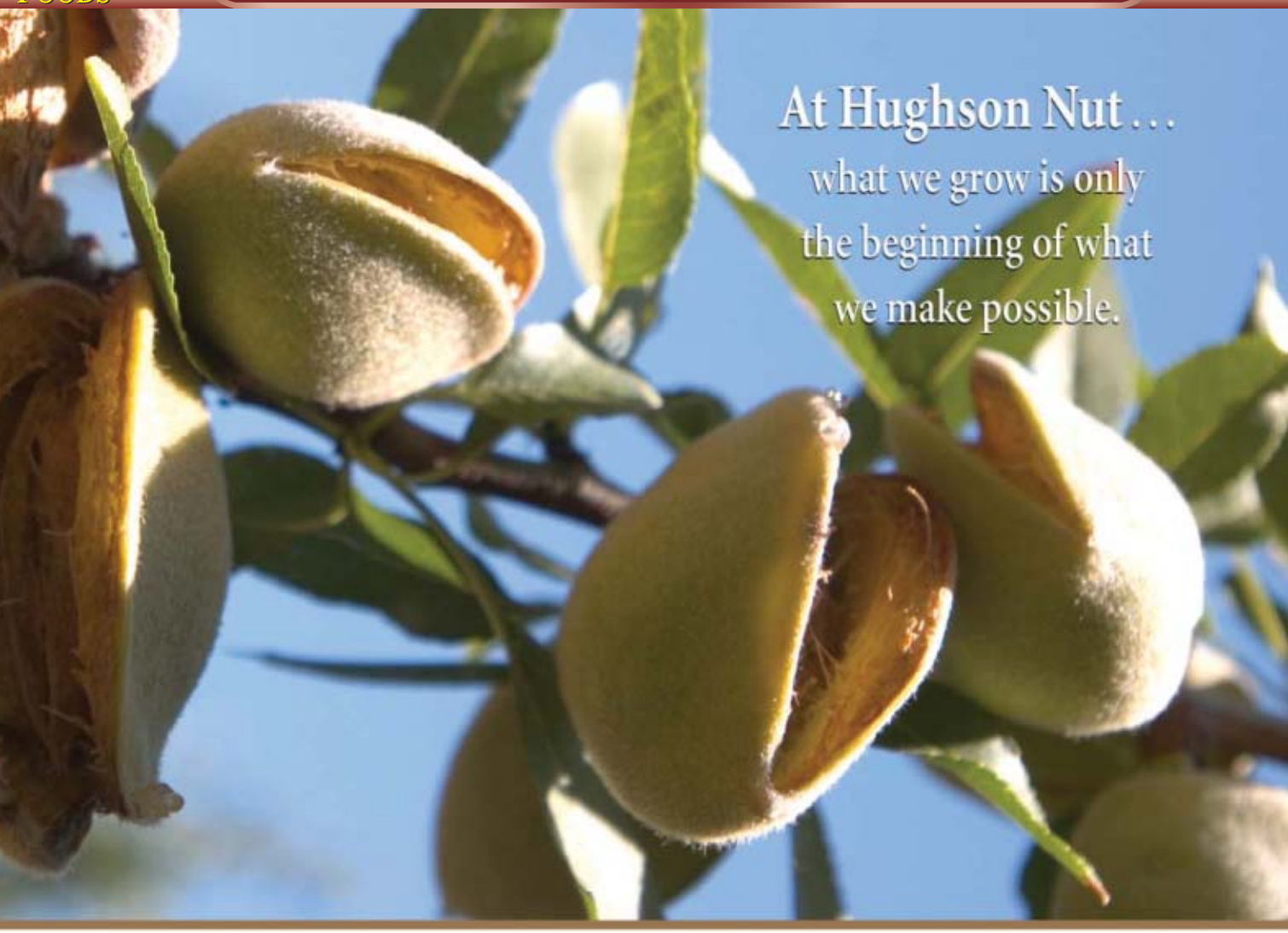

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A Grainy Picture

As the outlook for cereal bar growth blurs, the future hinges on hitting ample target markets with relevant, multi-dimensional products.

Tom Zind, Contributing Editor

Few packaged food innovations have proven as inspired in recent years as cereal bars. A prime example of the power of line extensions and user-friendly food forms, the category has been a hit because it has resonated so well with the consumer's changing lifestyle.

However, the category's torrid growth pace may be slowing. A Mintel International report on the $1.4 billion U.S. cereal bar market predicts sales growth over the next five years will slow to a little more than half the pace of the period between 2001 and 2006. Mintel attributes the likely deceleration of growth in the value of sales to a maturing market, a possible petering out of new product and innovative marketing ideas, and more private label entries.

Nevertheless, Mintel is upbeat about the possibility of respectable growth for the category, which it defines as including both granola bars, such as Quaker Oats' Chewy Granola, Sunbelt Granola Bars and Kudos Granola Bars, and breakfast/cereal/snack bars that are represented by products like Kellogg's Nutri-Grain, General Mills' Milk 'n Cereal and Quaker Oats' Fruit & Oatmeal bars. The definition does not include nutritional/intrinsic health bars like Power Bar and Clif Bar, nor rice snack squares.

Granola Growth

Mintel cites growth in the population of the product's target market and consumers' continued quest for healthy and portable foods as prime reasons for cereal bars' steady popularity. Mintel predicts cereal bar sales in the food/drug/mass channel (excluding Wal-Mart and warehouse clubs) will rise at an inflation-adjusted annual rate of 4% through 2011. Measured in 2006 dollars, sales are predicted to rise 22% by 2011. That compares to a 48% increase for the category between 2001 and 2006.

Meeting the need for something indulgent that can be enjoyed in moderation, Nabisco's 100 Calorie Oreo Bars fit the bill. Consumers can eat the product to get their "fix," yet still feel happy about the relatively low calorie content.

Granola bar sales have accounted for the lion's share of the category's growth, increasing 42% in constant 2006 prices between 2001 and 2006. Breakfast/cereal/snack bar sales grew 35% in the same period. In the last two years, as total category sales began to show a marked drop off, granola bar sales held up better than breakfast/cereal/snack bars. Between 2004 and 2006, granola bar sales increased 15%, while breakfast/cereal/snack bar sales advanced 9.6%. The total category's anemic 1% growth between 2005 and 2006 is blamed largely on slowing sales of the latter.

The same pattern is likely to hold for the foreseeable future. Granola bars are expected to account for slightly more of the market's expected growth.

Accounting for 53% of total category sales in 2006, granola bars have better growth prospects than breakfast/cereal/snack

Formulation Forum

A manufacturer of weight management and nutrition products needed help reformulating a breakfast bar and cereal line to increase the protein level and improve texture.

Solution

Grande Custom Ingredients Group's food scientists worked alongside the manufacturer's R&D team to develop a solution using Grande WPCrisp® whey protein crisps. This innovative product – customizable up to 80% protein – added an appealing crunchy texture. In addition to its ability to improve texture, WPCrisp® was chosen for its superior nutritional profile: whey protein has the highest biological value of any natural proteins and the highest level of branched chain amino acids from a natural food source. The new formulation resulted in a high-quality snack bar and cereal line that satisfied consumer desires!

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Photo supplied by GCIG.

Coffee lovers can enjoy the taste of java in Caribou Coffee's new granola bars. The company's website says the chewy granola bars are "dipped in a creamy coating made with Caribou Coffee — Enjoy the craft roasted aroma and taste." Additionally, the bars claim to be a good source of calcium and whole grain.

bars, which held a 47% share. That is because they are positioned as more versatile in terms of eating occasions and as having a broader mix of benefits and attributes. Sales of granola bars are seen as growing at an inflation-adjusted annual rate of 3.9% through 2011. At constant 2006 prices, sales are seen increasing a total of 21% by 2011.

Meanwhile, breakfast/cereal/snack bar growth is likely to be hampered by a consumer perception of fewer appropriate consumption times and fewer perceived health attributes. Sales are predicted to increase at a 2.5% annual clip through 2011. At constant prices, sales are forecast to grow a total of 13% between 2006 and 2011.

Several factors and trends will come into play as the cereal bar market continues to mature. On the consumer side, demographics and continued interest in health and wellness and convenience look poised to keep demand humming along. On the supply side, more entrants, greater price competition, brand-building and line extension prowess will determine the category's growth trajectory.

Based on a consumer survey commissioned for its report, Mintel says cereal bars can now be considered a regular component of the diet of most Americans. It bases that on the survey finding that 65% of adult respondents say they eat some kind of cereal bar, a figure that includes products fitting the protein/energy bar definition.

Cereal bars are consumed for a host of reasons, all of which are likely to continue to be relevant. Commonly cited reasons include meal replacement, snack, weight loss, energy boost, metabolism regulation and convenience. Marketers are keying on this and incorporating claims that reference everything from "low-/no-trans fat" to "organic" to "fortified."

Population trends are likely to work in the category's favor. Consumption is highest among those aged 18 to 34, teens and those who head households with children. While the latter demographic may be peaking, 35% of homes now include children. Mintel notes that the ranks of those aged 15-24 will grow 2.4% between 2005 and 2010, while the 25-34 age group will increase by 5.2%.

Slower Growth Ahead

Forecast of Total U.S. Retail Sales of Cereal Bars, at Current and Constant Prices, 2006-2011, in Millions

Year	Sales at Current Prices ($ Millions)	% Change	Sales at Constant 2006 Prices	% Change
2011	$2,046.3	-	$1,414.7	-
2010	$1,912.7	8.3%	$1,480.7	4.7%
2009	$1,785.3	8.1%	$1,546.9	4.5%
2008	$1,657.1	7.7%	$1,610.2	4.1%
2007	$1,532.5	7.1%	$1,666.8	3.5%
2006	$1,414.7	7.0%	$1,722.9	3.4%

Source: Mintel

A Multi-purpose Food

Reasons for Eating Cereal Bars are Varied

	Cereal or Breakfast Bars	Granola Bars
As a snack	66%	88%
As a meal replacement	48%	31%
As an energy boost	19%	26%
For weight-loss or maintenance	17%	16%
Maintain blood sugar	15%	17%
Other	11%	8%
Maintain metabolism	10%	13%
With exercise or fitness	9%	11%
Mean # of reasons	1.95	2.11

Source: Harris Poll Online/Datascension/Mintel
n= 837 adults aged 18 or older with Internet access who eat cereal or breakfast bars
n= 800 adults aged 18 or older with Internet access who eat granola bars

The growth of the Hispanic population also could be a boon for the category. Hispanics are more likely than the general population to eat cereal bars, particularly granola bars (which are experiencing faster growth). The Hispanic population is projected to grow; plus, it skews younger and is more likely than average to contain households with children.

Facing the Future

Facing a market with changing dynamics, major players are looking for ways to pump new life into cereal bars, while others look to get in the game.

Four companies—Quaker Oats, General Mills, Kellogg and Kraft—dominate the market. Their products accounted for 76% of FDM sales in 2006. The top-selling bars are Quaker's Chewy Granola, General Mills' Nature Valley, Kellogg's Nutri-Grain and Special K, and Kraft's South Beach. Between 2004 and 2006, sales of these brands grew 24%, compared to total category growth of 12%.

New products and line extensions dwindled further in 2006. Through September 20, 2006, GNPD data showed new products/line extensions, including energy bar products, came to market. In 2005, 523 products were introduced, and in 2004 the count was 616. Data show that keeping bar portfolios inspired, fresh and supported is key.

Kellogg, the breakfast/cereal/snack bar leader, saw sales increase just 3% between 2004 and 2006. Nutri-Grain sales were flat during that period, and others in its portfolio showed double-digit declines. However, Special K and All Bran bars showed robust growth, attributable to heavy ad support. Kellogg spent $8 million promoting Special K bars in 2005. The result: a $20 million boost in sales in two years.

Bar Blues

Manufacturer Sales of Cereal Bars in the U.S., 2004 and 2006

Manufacturer	Sales 2006 (est.)	Sales 2004	% Change
General Mills	$286	$253.7	12.7%
Quaker Oats	$272.5	$277.2	-1.7%
Kellogg	$263.3	$254.4	3.5%
Kraft	$99.7	$15.7	533.8%
McKee Foods	$55.1	$57.5	-4.1%
Other	$128.9	$141.5	-8.9%
Private label	$93.2	$66.4	40.4%

Excludes Wal-Mart, natural and c-store sales
Source: Mintel/Based on Information Resources Inc. Infoscan® Reviews Information

Similarly, Kraft spent $20 million pushing its Post Cereal Bar brands. That effort, combined with the decision to license the South Beach name for a new bar, helped the company gain almost 15 percentage points of market share between 2004 and 2006.

General Mills, the leading marketer of granola bars, cemented its lead by introducing products in its Healthy Heart line carrying healthy, "low-in" claims

and also via line extensions like Nature Valley Sweet & Salty. Meanwhile, its line of "chewy" bars sagged, possibly from a dramatic ad-spending cut in 2004.

While major marketers jockey for position, smaller, niche brands may be nipping at their heels. Brands with less than a 5% market share grew 21% between 2004 and 2006, suggesting an opening for smaller players.

The real competition could come from private labels. Sales of private label cereal bars topped $93 million in 2006, an increase of 40% from 2004. Although they accounted for just 7.8% of category sales, private/store label bars could get a tailwind from growing interest in store brands, generally—and from filling gaps left by the exit of small brands and failed line extensions by bigger marketers.

Another effect of more private label sales could be downward pressure on prices; private label products can sell for up to 25% less than branded counterparts.

Private label sales are strong because supermarkets are the dominant distribution channels for cereal bars. Although they have lost some share to mass merchandisers like Wal-Mart, possibly spurring private label entries, supermarkets have 75% of the market.

After watching Wal-Mart grow its cereal bar sales 172% between 2001 and 2006, supermarkets may be seeing the tide turn. Mass merchandiser share has stabilized, even though cereal bars are a natural fit for mass merchandisers.

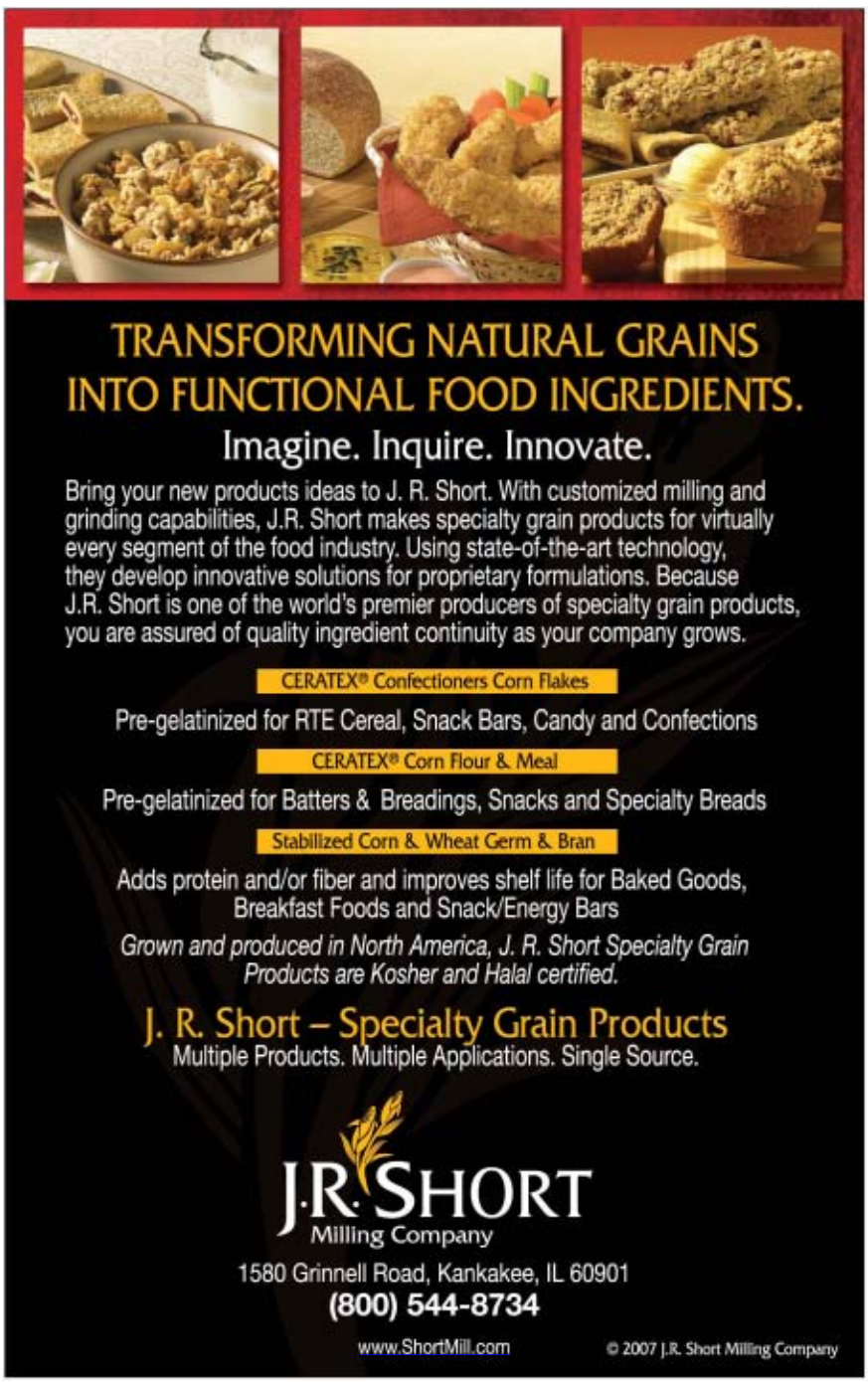
Marketers, though, should keep an eye on sales through natural food outlets. Though accounting for just 2% of sales, natural stores' cereal bar business grew the fastest in the last two years.

Tip Top Shape

Squeezing more growth out of cereal bars will require the best that product developers and marketers can summon. One thing working in their favor is that the products have fundamental qualities that should continue to prove durable. The trick will be to build on that solid form and function platform by staying current with food flavor and texture trends, eating habits, and health and wellness concerns, plus positioning cereal bars to incorporate relevant features and messages.

By parlaying successful products into cereal bars via line extensions, portraying products as more versatile to broaden their appeal or focusing on distribution channels that cater to core users, marketers may be able to hurdle the higher bar that has been set by a decade of phenomenal growth. pf

This article contains information from the Mintel report "Cereal Bars-U.S.-September 2006." Please visit http://reports.mintel.com for more information or call Mintel at 312-932-0400.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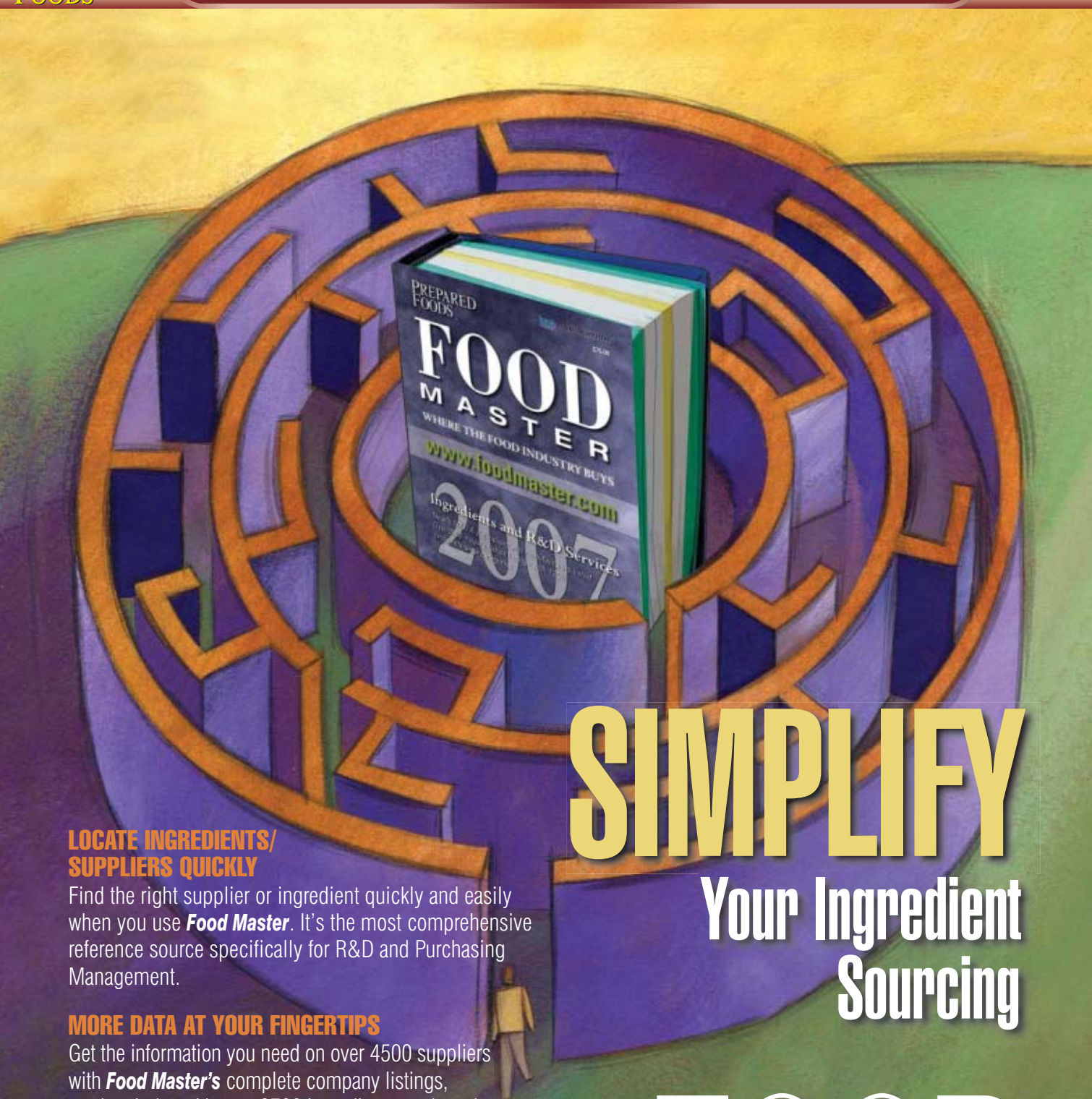

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Buy the Hundreds

With more studies drawing a link between portion size and the obesity crisis, manufacturers continue their efforts to diminish portions in packages.

Oberto Sausage Company has launched its first forays into the 100-calorie pack collection with 100 Calorie Original Beef Jerky Bites and 100 Calorie Teriyaki Turkey Jerky Bites, both of which carry PepsiCo's Smart Spot symbol. (The snacks are distributed nationally by PepsiCo.) In addition to the small amounts of calories, the products pack a protein punch with 13g and 12g per 100 calories in the beef and turkey varieties, respectively.

However, many consumers simply want a calorie-conscious indulgence, and manufacturers likewise are responding. Interstate Bakeries Corp.'s Hostess brand is endeavoring to capitalize on the 100-calorie trend with packs of chocolate cake with chocolate icing, golden cake with chocolate icing and carrot cake with cream cheese icing, all with a creamy filling.

Drink and Be Merry

The adult beverage segment was at one time the very definition of indulgence, with hardly a nutritional benefit to be found. Oh, how times have changed.

Now, a couple of glasses of wine are considered healthy, and while energy drinks may not be the epitome of nutrition in the minds of many, their ingredients can be found in an increasing number of brewers' offerings. However, nothing yet battles post-drinking blues—until now.

Gemini Alliance has launched what it terms is a "restorative" beverage as an "all-natural way to restore lost nutrients due to lifestyle activities." (Two other varieties promise to help recovery after smoking and flying, respectively.) Mr.Re Restorative Beverages, described as "The Drink You Drink After You Drink," have a Russian recipe as their base, no preservatives, caffeine, sodium or high-fructose corn syrup and a low caloric content.

Have Faith

Rarely does a brand make the leap from one category to another. Rarer still will a brand leap from being a foodstuff into another consumer product; the reverse of that (from consumer products into foods) is almost unheard of.

The small, "faith-inspired" company 1in3Trinity is best known for its signature, branded line of Christian clothing and accessories. However, the company has its eyes on the burgeoning energy drink segment.

The manufacturer claims 1in3Trinity Energy Drink is made of a "special blend from the flourishing vines and trees of the Holy Land mixed with B-vitamins, vitamin C, herbs and antioxidants." Each can has 10 calories and 3g of sugar, and the beverage promises to taste of pomegranate and grape.

Company president and co-founder Paula Masters notes, "We have an opportunity to reach one of the largest generations to hit the marketplace since the Baby Boomers—Gen X and Y—with dynamic products and a value-added message."

Tears of a Clone

Dean Foods Company announced it will not purchase milk from cloned cows, and the decision may have widespread ramifications.

The FDA has issued a "draft risk assessment," which noted cloned stock were safe, and the agency is seeking comments from the public before making a final policy. However, the company was clear: FDA approval does not matter.

"If the FDA does approve the sale of milk from cloned cows," Dean's statement noted, "we will work with our dairy farmers to implement protocols to ensure that the milk they supply to Dean Foods does not come from cloned cows." pf

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new product trends

market watch

THE IN BOX:

For daily industry news updates, see the homepage of www.PreparedFoods.com and www.NutraSolutions.com.

■ InterHealth Nutraceuticals appointed Paul Dijkstra as CEO.

■ Robert Fisher joined Tate & Lyle as head of Global Research and Development following the retirement of Bob Schanefelt.

■ Wixon Inc. kicked off its centennial celebrations with the unveiling of a 100th anniversary banner on the front of its headquarters, 1390 E. Bolivar Ave., St. Francis, Wis.

■ Main Street Ingredients promoted Aaron Macha to vice president of sales.

■ Cargill has finalized agreements with three Canadian food distributors—L.V. Lomas Limited, Nealanders International Inc. and Univar Canada—to supply products manufactured by Cargill Texturizing Solutions (CTS) and Cargill Sweetness Solutions (CSS).

■ Nikken Foods Company USA Inc. promoted Jim Nolte to director of technical services.

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Chef Robert Del Grande's
Seared Sea Scallops with Salsa de Pasitas Verdes (Green Salsa with California Raisins) and Pears

California Raisins are the most versatile ingredient in the kitchen today. As leading chefs know, the flavor that California Raisins can add to any dish is immeasurable. California Raisins marry well with warm or spicy flavors like vanilla, cinnamon and citrus.

Del Grande often deploys California Raisins in novel combinations with salty, crunchy, spicy and smoky ingredients. This cooks up to a complex spectrum of subtle and balanced flavors, from the deep and earthy to the highly aromatic. His recipe for Sea Scallops with Green Salsa with California Raisins and Pears (featured above) is the perfect balance of sweet, succulent and savory.

Howsoever they are used, raisins provide a healthy, flavorful experience for your guests.

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Executive Chef and Owner
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Donut Whole

Whole grains continue to permeate the aisles of the grocery store, and the trend's influence is extending even further. The Whole Grains Council's Whole Grain Stamp (designed to help consumers easily locate whole-grain products) can now be found on more than 1,000 food packages.

Three products tied to become the 1,000th product: Annie's Whole Wheat Shells and Cheddar, Thomas' Whole Wheat Mini Square Bagelbread and Multigrain Lightly Salted Tortilla Chips from Snyder's of Hanover. As Jeff Dahlberg, chairman of the Whole Grains Council, notes, "These three products—an entrée, a bread and a snack—illustrate the huge diversity of the 1,000 products bearing the stamp."

The stamp details the food's whole-grain content, and the product must contain a half serving (8oz) or more of whole grains per serving to qualify. Some 76% of the products currently bearing the stamp contain a full serving (16oz) or more of wholegrain. (Dietary Guidelines recommend three or more servings of whole grains each day.)

The desire for whole grains is not limited to the retail side of the industry, however. Krispy Kreme, the "overnight" success story of a few years ago which faded during the carb-cutting fad, has joined the whole-grain bandwagon. The company has introduced a whole-wheat glazed doughnut, made with 100% whole wheat and boasting a sweet caramel flavoring covered in Krispy Kreme's original glaze. The chain boasts the product has 180 calories per doughnut though-upon closer inspection, this is a not-so earth-shattering 20-calorie reduction. Likewise the fat content is hardly reduced at all (12g in the original, 11g in the whole-wheat version), nor is trans fat content, which drops from the original's 4g to 3.5g in the whole-wheat variety. PF

Posting Stamps

Number of Products Bearing the Whole Grain Stamp, by Category

Bars	54
Breads	239
Cereals, cold	94
Cereals, hot	107
Entrées	9
Flours	41
Grains and grain side dishes	79
Mixes for baking	45
Pasta (including couscous)	39
Pizza/Pizza crust	13
Snacks and crackers	65
Soups	3
Tortillas/Wraps/Flatbreads	54
Treats (cakes, cookies, muffins, etc.)	27
Waffles	23

Source: Generated from the Whole Grains Council's Stamp Product List dated February 21, 2007

THE IN BOX: (cont.)

- Danisco has launched a website (www.litesse.com) dedicated to Litesse, its polydextrose that promises a number of nutritional advantages.
- MGP Ingredients Inc. (MGPI) promoted Laura Bellman to director of environmental, health and safety (EHS) programs at the company's Atchison plant and Li Nie as director of biopolymer technology at MGPI. The company also announced that construction of its new technical innovation center in Atchison has been completed, and work on the company's new corporate office building will be finished next month as planned.
- Nutri+Food Business Consultants launched, promising to assist "clients who need enabling science and technology to solve technical challenges, create differentiating value or commercialize business strategies and who are seeking to leverage opportunities for science platforms into existing or new markets.

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See Food Master-*INGREDIENTS*, p. 110

THE IN BOX: (cont.)

- The Global Organization of EPA and DHA Omega-3 (GOED Omega-3) launched a new website at www.goedomega3.com.
- Patrick Duggan became a member of the Bell Flavor sales force, and Mark Tiger joined Bell from ConAgra Food Ingredients.
- PASTA USA joined Conte Luna Foods and Minot Milling as a division of Philadelphia Macaroni Company (PMC).
- Symrise acquired 100% of the share capital of Steng Ltd., a British supplier of herb and spice pastes, stocks, marinades and natural flavorings.
- SIG Strategic Investments LLP acquired substantially all of the assets of U.S. Mills Inc.
- Griffith Laboratories Worldwide announced the promotion of Chris Savage to president, Griffith Laboratories Canada.
- Treatt plc and Earthoil announced a strategic investment by Treatt in the Earthoil group of companies.
- Vitiva opened a new sales office in Cannes, France, to serve its customers in the dietary supplement and food and beverage markets.

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Yogurt Base:
1/4 cup Tree Top Pear Juice Concentrate
2 1/2 cups vanilla yogurt
1 tablespoon vanilla
1 tablespoon honey
1 cup water
After pomegranate base has frozen, combine Pear Juice Concentrate, yogurt, vanilla, honey and water in a large mixing bowl. Whisk until smooth. Fill bottom half of the molds with yogurt mixture and freeze until firm.
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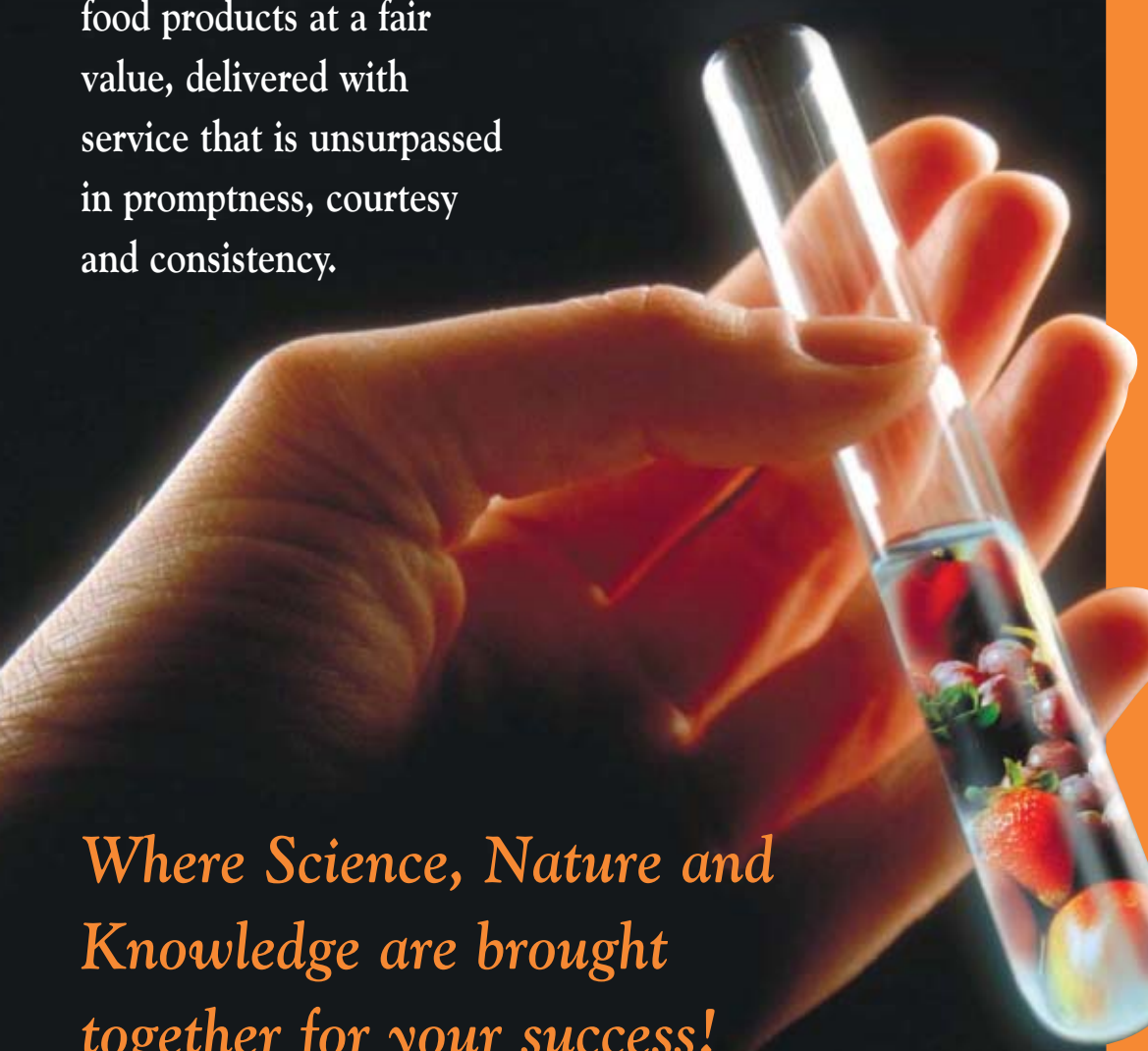

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See Food Master-*INGREDIENTS*, p. 92

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Land of the Free

Mark Hostetler, Blackwell Sanders Peper Martin LLP

The Food Allergen Labeling and Consumer Protection Act (FALCPA), which requires the plain English labeling of eight major allergens, also directed the Secretary of Health and Human Services to consider and propose a definition of "gluten-free." Persons with celiac disease or celiac sprue or gluten-sensitive enteropathy, which has no cure, are advised to avoid all sources of gluten (a protein in certain cereal grains). The FDA has published its proposed rule defining "gluten free" and other terms (72 FR 2795; 1/23/07). Comments will be accepted at least until April 23, 2007.

The proposal would define:

1. "gluten" as:

. . . proteins that naturally occur in a prohibited grain (a defined term) and that may cause adverse health effects in persons with celiac disease 101.91(a)(2).

2. "prohibited grains" as:

wheat (Triticum); rye (Secale); and barley (Hordeum); and crossbred hybrids of the three grains; but not including "oats" and "millet," which could be marketed as "gluten free" if the finished product contains less than 20ppm gluten 101.91(a)(1).

3. "gluten free" as:

a food which does not contain:

- a prohibited grain.
- an ingredient from a prohibited grain which has not been processed to remove the gluten.
- an ingredient from a prohibited grain which has been partially processed to remove the gluten, but gluten levels remain above 20ppm.
- 20ppm or greater gluten. (20ppm appears to be the limit of detection using existing methodology, none of which has been Association of Official Analytical Chemists [AOAC]-approved.)

4. a food which is naturally free of gluten (milk, vegetables and fruits) could claim, for example, "Milk—a gluten-free food" but could not be labeled as "Gluten Free Milk."

Other ingredients in the proposal:

Although "oats" are not included in the list of "prohibited grains" because oats often are mixed with or present with "prohibited grains," the FDA proposal does not permit an "Oats- a gluten-free food" label claim.

The proposal identifies hydrolyzed wheat protein, wheat bran and malt vinegar, among others, as examples of ingredients from which a portion of the gluten (protein) has been removed but an insufficient amount to qualify at the 20ppm level.

The proposal identifies modified wheat starch and wheat starch as ingredients which could be used in a "gluten-free" product, as gluten has been removed below the 20ppm threshold.

The proposal goes on to raise a number of additional and relevant questions for comment. The limits of detection and analytical methodology are both issues open for comment.

Fresh Produce Safety

The FDA has announced that it plans to hold two public hearings to discuss the safety of fresh produce. The notice is clearly in response to recent outbreaks, seeking information on these outbreaks and information on the general sanitary condition of the fresh produce industry.

The notice outlines areas for discussion and input:

- Supply chain issues relating to sanitation and product safety.
- Opportunities for federal interventions to promote sanitation and safe handling.
- Traceability—FDA notes that several stops in the supply chain—from farms to restaurants/foodservice—are not currently within the recordkeeping purview of the FDA.
- Are plans and procedures in place to deal with fresh produce safety issues, as they are for other types of food products?
- How can farmers, markets, distributors and end users not currently in the inspection and control stream be effectively brought into a food safety system for fresh produce?

Comments are due by June 13, 2007. Pf

Mark Hostetler is an attorney at Blackwell Sanders Peper Martin LLP. Experienced in advising consumer product companies and focusing primarily in the food industry, he has guided producers, advertisers and marketers through regulatory proceedings, product recalls, new product introductions and new advertising and promotional campaigns. He can be reached at mhostetler@blackwellsanders.com.

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Protecting Assets

Rebeca Lopez-Garcia, Contributing Editor

Recently publicized outbreaks have brought food recalls back in the spotlight. A full-scale recall can be catastrophic, and most companies do not realize the cost and implications of such an event. Recalls tremendously impact consumer trust in products and brand names. Since such an event is so serious, what can be done to decrease the risks? One answer is to get a food recall insurance policy. This may sound simple, and most companies consider that a liability policy is enough. However, not all policies are created equal, and companies usually do not consider the real financial implications of a full-blown recall.

Costs start with the products themselves and the logistics to get them off the shelves, shipped and most probably destroyed. In addition, advertising the recall, store fees, public relations, customer support, down time, analytical services and campaigns to restore a damaged reputation also have financial impact. Lost profits and damage to a firm's brand name may not even be factored. It is difficult to estimate losses once the recall is completed. The actual impact may not be evident until several years have passed. A study recently published in the *Journal Review of Agricultural Economics* estimated that brands recalled after incidents involving contamination with *L. monocytogenes* experience a 22% to 23% decline in brand sales after the recall, and most companies will take between 12 and 18 months to recover. In many cases, the final outcome may close a company's doors for good.

A recall policy helps protect more of a company's assets than most liability policies generally will.

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Liability vs. Recall Policies

Liability policies (LP) can have a recall endorsement. In reality, most of the aforementioned costs will not be covered, since this is not within the scope of these policies. LPs are designed to cover and protect a company from product-related lawsuits, not economic injury. In other words, an LP will cover the company against the legal aftermath, but it will neither help during the crisis nor aid in the recovery process. Where LPs have recall endorsements they are very limited and, in general, will only cover the cost of the recalled product. Thus, a recall policy is a must for the food/beverage and foodservice/restaurant industries for two basic reasons: to safeguard their balance sheet and protect their brand(s).

A recall policy should cover accidental contamination, malicious tampering incidents and product recalls. According to Neil Evans, class underwriter with Catlin Group Limited, food recall insurance should be a complement to the LP and cover all recall costs, including loss of profit and rehabilitation of market share. In addition, proactive preparation for a recall helps mitigate losses and increases successful recovery potential. The policy recently launched by Catlin provides a percentage of the yearly premium in consulting services to help develop crisis management programs. Catlin has retained RQA Inc., a company specializing in product contamination and recall, to provide specialist support for product recalls in the U.S. and Canada. According to Dan Cahill, vice president of RQA Inc., the consultancy provides policyholders with the tools needed for successful product crisis planning and management. In the event of a recall, policyholders have access to a help line 24 hours a day. A call to the emergency line kicks off a chain reaction that may include emergency food testing, tracking of potentially contaminated products and expert advice on crisis management, malicious product tampering, extortion, food safety and public relations.

Developing a product and positioning a brand takes a lot of time and effort. A single incident, whether malicious or accidental, may destroy it within days. Since all food companies are exposed, considering a complete recall policy may be the only way to avoid risky business. Can you afford to have your brand on the line? pf

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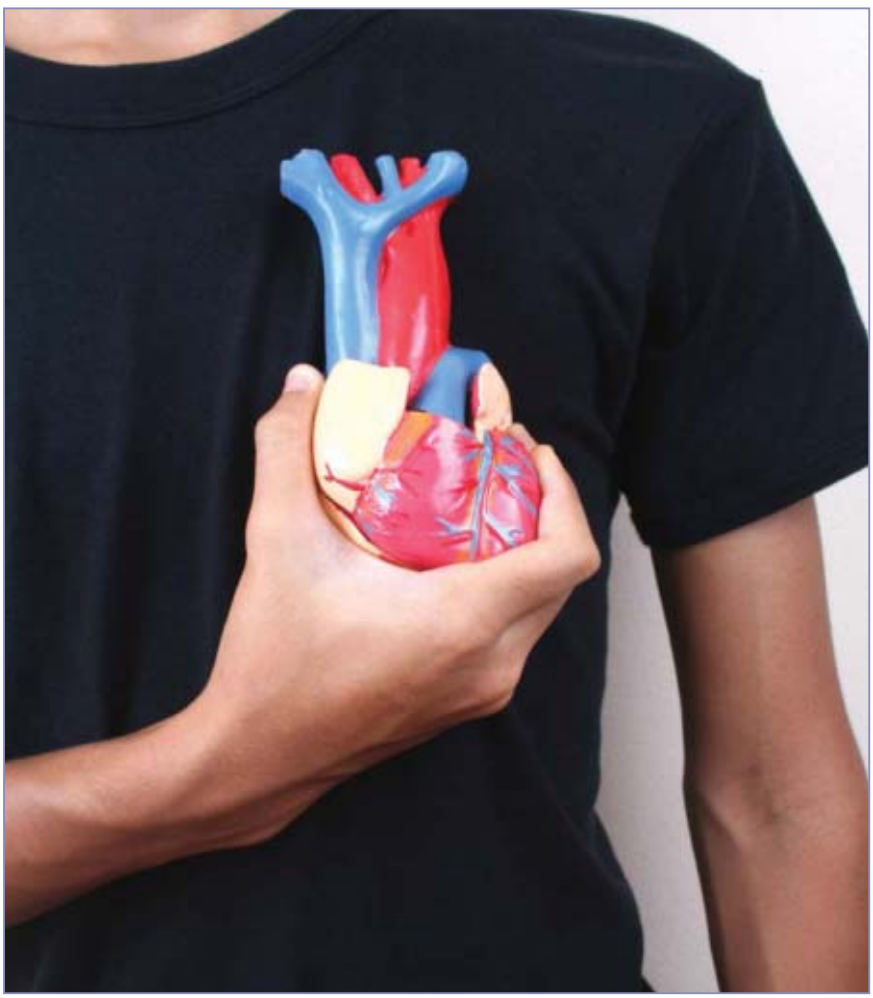

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HEART HEALTH Research

There is much research to support claims of "heart healthy" for many products and supplements, but consumers need to be aware of their importance. From vegetables to omega-3s, a plethora of research suggests that food companies are ready, willing and able to provide customers with many options for a "heart healthy" lifestyle.

The Alliance for a Healthier Generation is establishing voluntary guidelines for snacks and side items that are sold in schools.

Kerry Hughes, R&D Applications Editor

Every extra fruit or vegetable consumed can reduce risk of heart disease by 4%, according to a new meta-analysis conclusion by Dauchet, et al. (2006).[1] This is a solid message that can give consumers a new way to look at fruit and vegetable consumption, as the five-a-day message is not reaching them currently. Today, average consumption of fruits and veggies in the developed nations is estimated at about three servings.

Other messages trying to reach consumers regarding heart disease are found in the research and marketing in certain functional food ingredients, the reduction of salt in the diet and in the examination of school lunches and snacks.

As the increasing rates in childhood obesity point to future generations of increasing heart disease, it is important that children are not only taught about diet, but are given healthier and tasteful options. In October 2006, The Alliance for a Healthier Generation announced a collaboration of five American top food manufacturers who are joining to establish voluntary guidelines for snacks and side items that are sold in schools to provide healthier food choices for children. These guidelines will apply to foods sold outside the National School Lunch Program and will be science-based for promoting products that are lower in calories and reinforce what they learn about nutrition in the classroom.

This year, a global campaign called WASH (World Action on Salt and Health) was launched, focusing on reducing dietary salt intake in order to lower blood pressure. In the U.K., Ireland and the U.S., WASH claims that 80% of our intake of salt comes from processed foods, with 20% coming from meat and meat products, and 35% coming from cereal and cereal products. This is why WASH is focusing on educating and persuading international food companies and trying to implement a uniform lowering of salt levels in each country. As WASH claims that their mission to cut salt levels to benefit our cardiovascular health is backed by substantive research, others argue that there is still not a clear understanding of the link between salt and health. WASH cites the example of Finland, which has had a salt reduction program in effect since the 1970s, and has seen a related reduction in blood pressure, deaths, stroke and heart disease.

Among the functional foods focused on promoting heart health, new scientific advances are leading to new product formulations that are better for our health. If this year's research is an indication, look for advances in heart healthy products with whole grains, vitamin K, CoQ10, omega-3, soy, tomato extract, açai and pomegranate, to name just a few.

Whole grains: Whole grains are not only growing on the market due to allowance of a health claim, but the research also is continuing. In the market, one big move was made by General Mills, who after seeing the opportunity, converted its entire cereal line to whole grain. According to Carolyn Good from General Mills, there were several consumer misconceptions that presented hurdles to their development of whole grains. One was that three quarters of all consumers already think they get enough whole grains. Another was that they were bad-tasting, and were present only in brown goods, not white. (See "On the Web" sidebar for article on General Mills' efforts to convert to whole grains.)

On the research side, in the September 2006 issue of the *Journal of the American Dietetic Association*, a small study found that whole fiber from wheat and brown rice or soluble fiber from barley could significantly lower blood pressure in people with mildly elevated cholesterol. The study consisted of 25 people who, after following the American Heart Association's "Step 1" controlled diet for two weeks, then were placed on a diet (for three five-week periods) where the refined carbohydrates were substituted by either whole wheat and brown rice or barley or a combination (Behall, et al., 2006).[2]

Vitamin K: Vitamin K1 is found in leafy green vegetables such as lettuce, broccoli and spinach and may be able to reduce risk of fatal coronary heart disease by 19%. A lower but non-significant reduction was also seen in non-fatal heart attack. Published in the journal *Nutrition*, Kaneki reviewed data from the Health Professionals' Follow-up Study that included 40,000 men (Erkkilä, et al., 2006).[3] In another study, Maas, et al. (2006)[4] found that although vitamin K is an important co-factor in the production of proteins that inhibit calcification in the breast arteries, a lower dietary intake was not found to be associated with breast calcifications (assessing vitamin K1 and K2 intake from a food

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frequency questionnaire among 1,689 women).

CoQ10: The huge body of research on CoQ10's heart health properties continues with a recent study showing that CoQ10 may be able to improve the heart's functional capacity and endothelial function. The study involved supplementation of 100mg CoQ10 (Q-absorb, Jarrow Formulas) three times daily, plus exercise training five times a week vs. placebo and the same exercise regimen. Measures of peak volume of oxygen consumed (VO2 Max) showed that in the CoQ10 group, the heart's functional capacity significantly improved by 9%. A similar improvement was found in the CoQ10 group with exercise. CoQ10 also was found to increase blood flow by 38%, as measured by endothelium-dependent dilation of the brachial artery (EDDBA) (Belardinelli, et al., 2006).[5]

In a recent meta-analysis on the effect of CoQ10 on systolic function, CoQ10 was found to improve systolic function in chronic heart failure patients. The authors, however, concluded that its effectiveness may be reduced with the combined use of standard pharmaceutical therapy, as a more profound effect of CoQ10 was found among those not receiving angiotension-converting enzyme inhibitors (Sander, et al., 2006).[6]

Omega-3: The importance of omega-3s to our health is becoming recognized by mainstream medical thought. A new index, called the "omega-3 index," has been suggested as a new measure for cardiovascular risk. This index is essentially a measure of the omega-3 status of a person (the percentage of EPA and DHA in red blood cell membranes) and could help physicians to better manage the health of their patients, as omega-3s are not only related to cardiovascular health, but also to pregnancy and the development of a fetus, joint health, mood and certain cancers. The index was suggested by authors of a new meta-analysis that showed support for the benefits of omega-3 intake (Schacky and Harris, 2006).[7]

Omega-3s, notably DHA and EPA, have had recent research findings showing that they may induce favorable heartbeat, improve childhood depression and risk of developing allergy, and increase the production of brain cells. For example, people who ate fish often (five or more times per week) had a significantly lower heart rate and other beneficial cardiovascular measures when compared to those who ate fish less than one

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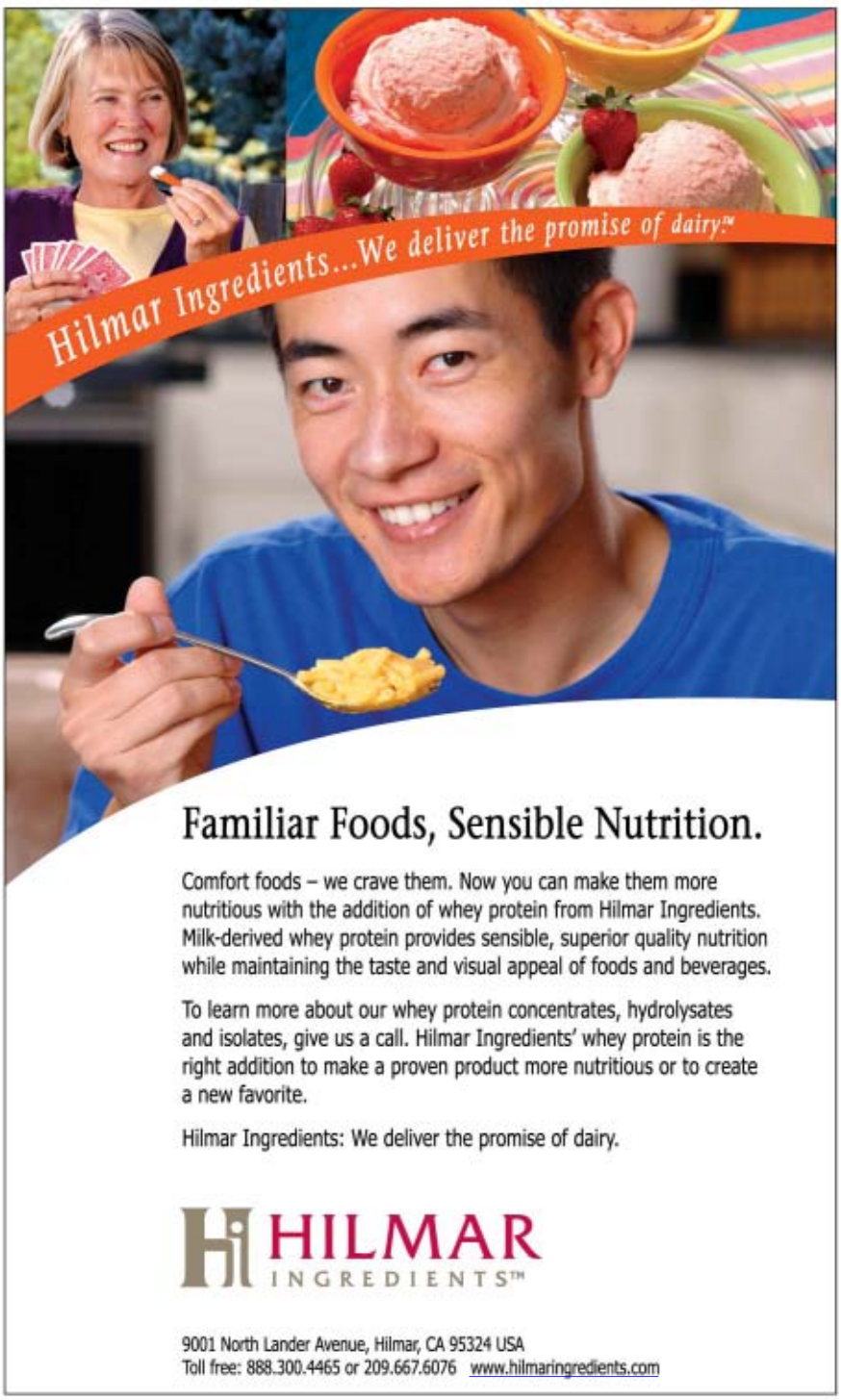
See Food Master-*INGREDIENTS*, p. 148

PREPARED FOODS Previous Page | Contents | Zoom in | Zoom out | Front Cover | Search Issue | Next Page qMags

time per month. In another study, children who ate fish in their first year two to three times per month were found to have a 40% lower chance of developing allergies later in life (see *Fats of Life Newsletter* mentioned in "On the Web" sidebar).

Tomato Extract: In a double-blind, randomized study and an in vitro study both published in the *American Journal of Clinical Nutrition*, tomato extract was found to reduce platelet aggregation. In the clinical study, tomato extract or placebo was given to participants, and three hours later platelet aggregation was measured. With an extract equivalent to two and six tomatoes, platelet aggregation was significantly reduced. The in vitro study showed support for the mechanism of action of the tomato extract being the inhibition of glycoprotein IIb/IIIa and platelet secretory pathways, thereby inhibiting platelet aggregation (O'Kennedy, et al., 2006).[8]

Soy: The first study to look at the relationship between an isoflavone supplement and platelet receptors in humans may show that soy produces heart health benefits through its effect on platelet aggregation rather than improving cardiovascular risk factors. In this double-blind placebo controlled study, 29 postmenopausal women took a soy isoflavones supplement (100mg isoflavones, containing 46.8mg daidzein and 48.2mg of genistein) or placebo for three months. The active group had no changes in other lipoprotein markers but did have a significantly decreased density of TxA2 platelet receptor density. If these results are reproduced, it may cause a change in thinking on how isoflavones affect our cardiovascular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- www.fatsoflife.com/fatsoflife/newsletter.asp?nid=2&edition=this—*Fats of Life Newsletter*—a quarterly newsletter for consumers about healthy fats
- www.healthiergeneration.org—The Alliance for a Healthier Generation
- www.nutraingredients-usa.com/news/ng.asp?id=70651—An article on General Mill's conversion to whole grains

PREPARED FOODS Previous Page | Contents | Zoom in | Zoom out | Front Cover | Search Issue | Next Page qMags

A study out of Spain indicated that although both walnuts and olive oil are able to decrease the onset of inflammation and oxidation after a high-fat meal, only walnuts helped maintain blood vessel flexibility.

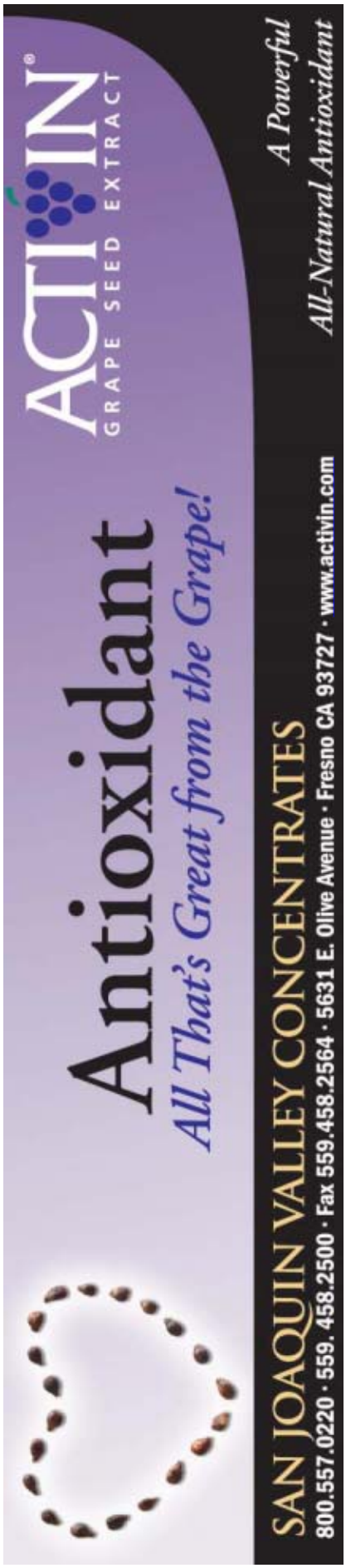
health (Garrido, et al., 2006).[9]

This research comes at a time when the "perception of soy's healthfulness" has jumped from 67% in 1998 to 82% in 2006, according to the 13th Annual Consumer Attitudes about Nutrition National Study.

Walnuts: Walnuts have been found to have better heart healthy benefits than olive oil, says a new Spanish research study (Cortes B, et al., 2006).[10] Although both walnuts and olive oil are able to decrease the onset of inflammation and oxidation in the arteries after a high-fat meal, only walnuts were able to maintain blood vessel flexibility. This research comes at a time when omega-3s from fish have earned a health claim, but walnuts were given only a qualified health claim stating: "Supportive but not conclusive research shows that eating 1.5oz of walnuts per day as part of a low-saturated-fat and low-cholesterol diet, and not restricting in caloric intake, may reduce the risk of coronary heart disease." The California Walnut Board and walnut researchers contend that walnuts contain the same linolenic acid that is found in other omega-3 sources, but they are a more sustainable source. Many people believe in the benefits of the Mediterranean diet which are touted to come from olive oil, but according to Robert Vogel, M.D., professor of medicine at the University of Maryland, there are other factors including nuts in this diet that are important plant foods to be studied.

Pomegranate: Pomegranate is poised to be the next big superfruit known to also be healthy for the heart. As quality and ensuring functionality should be central concerns to developing functional food ingredients, Reading Scientific Services Ltd. (RSSL), has developed a test method based on ellagic acid to indicate pomegranate concentration in a food product. A recent study found that pomegranate juice had antioxidant activity that resulted in protection of nitric oxide (NO) from oxidation, causing an alteration of the biological actions of NO. Another recent study found that one glass of pomegranate juice daily could cut in half the build-up of proteins that are linked to Alzheimer's disease. Previous studies showed that daily ingestion of pomegranate fruit juice prevented the thickening of the arteries, slowed down cholesterol oxidation and reduced retention of LDL (Ingarro, et al., 2006).[11]

Açai: Another heart healthy superfruit is açai, with its history as a wellness food from Brazil. Açai was tested for its antioxidant capacity, and the purple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varieties were found to be excellent against peroxyl radicals, good against peroxynitrite and poor against hydroxyl radicals, compared against other European fruits and vegetable sources. As the major phenolic compounds in açai were tested to only contribute 10% of the total antioxidant capacity of the fruits, the authors concluded that there are other compounds responsible for the majority of the antioxidant activity, although they have not yet been identified (Lichtenthaler, et al., 2005).[12] Another story about açai that is not necessarily going to cut cardiovascular risk, but may make consumers feel better, is that much of its source is from an equitable trade philosophy and can help rural people create incomes that do not degrade the Earth. The variety of options in our diets for reducing cardiovascular disease keeps expanding, as does the research. As more delicious and functional foods and ingredients are developed, imagine the variety of fruits and vegetables that will soon be available. The heart health revolution can only be good for your dinner plate. NS

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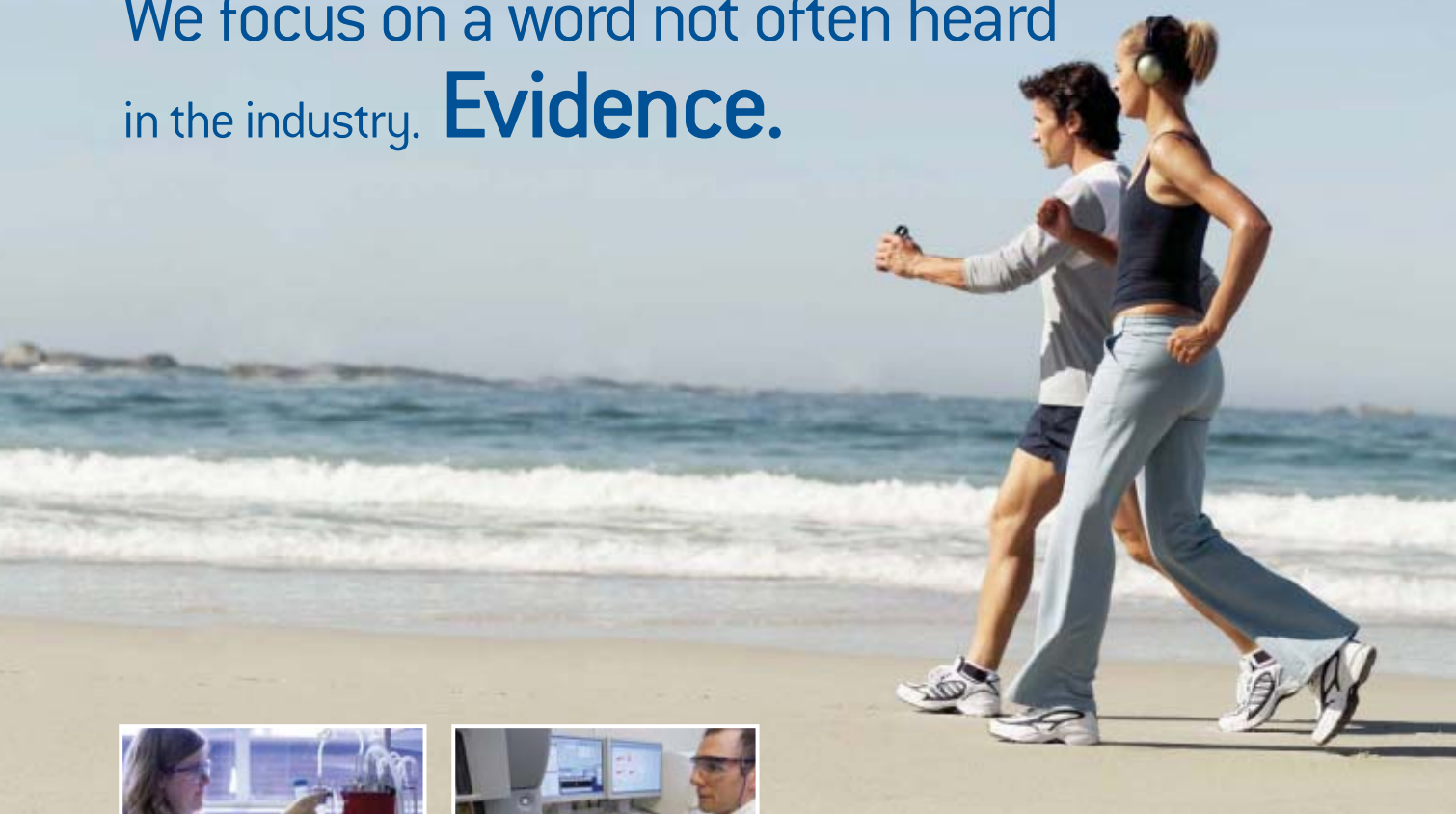

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VISCOSITY Good for Heart and Waistline

Kerry Hughes, R&D Applications Editor

Although low-glycemic foods and beverages were new to the scene a few years ago, they have established themselves as a viable niche in the mainstream market, according to a new report titled "Low Glycemic Index Food and Beverages in the U.S.," by Packaged Facts. This report also projected that sales of low-glycemic products will grow quickly at an annual growth rate of 45% from 2007 to 2011. A key driving factor of this growth is consumer awareness and choices of better carbohydrate sources.

Fiber is important among carbohydrate choices and is enjoying a renewal of interest by consumers due to its heart healthy claims. Cevena has developed a high-viscosity fiber product called Viscofiber, derived from either oat fiber (up to 50% β-glucan concentrate) or barley (up to 60% β-glucan concentrate). Viscofiber is 80 times more viscous compared to other commercial fibers, is GRAS-approved and kosher. Viscosity is important for health benefits such as improving cholesterol levels.

Cevena has supported clinical studies investigating the other health benefits of Viscofiber. Two completed studies have demonstrated that this ingredient improves glycemic response, while the most recent study confirmed that it increases satiety and helps promote weight loss.

In this recent pilot clinical study, 4g daily of Viscofiber was administered to seven subjects to determine if it had any affect on improving body weight—in combination with a calorie-restricted diet and lifestyle change program over 16 weeks of treatment. Over this 16-week study, a statistically significant weight loss was observed, as well as a decrease in the desire and ability to eat.

The new fiber is some 80 times more viscous than other commercial fibers, a crucial attribute since viscosity is important for health benefits.

Viscofiber is touted as having not only several health benefits, but also multiple functional benefits and various applications. It is useful in dietary supplements, functional foods, beverages and confections. In functional foods, Viscofiber displays excellent dispersion, has a neutral flavor, acts as a thickening agent and can be used as a stabilizer and as a fat replacement in foods. In dietary supplements, its high concentration of β-glucan targets health benefits while also having a formulation advantage over lower concentrate β-glucan products. Another advantage of Viscofiber is that it can increase compliance with fewer pills or capsules required to attain health benefits. NS

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See Food Master-*INGREDIENTS*, p. 162

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Heart-Healthy Hazelnuts

A new study, published in the September issue of the *European Journal of Clinical Nutrition*, found a single serving a day of hazelnuts favorably alters multiple plasma lipid variables and reduces risk of coronary heart disease (CDH). Results show the monounsaturated fatty acids (MUFAs) in hazelnuts significantly increased HDL "good" cholesterol concentration while reducing triacylglyerol (TAG) concentrations. This study is one of the first to break ground on how MUFA-rich hazelnuts affect the plasma lipid response to a cholesterol-lowering diet. The Hazelnut Council, www.hazelnutcouncil.org

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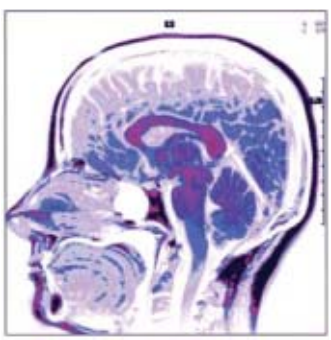

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Cuban Cuisine: On Trend and Coming Fast!

The media attention accompanying Cuba's eventual change in government will dovetail nicely with a red-hot interest in Hispanic foods. Because of its unique political circumstances, Cuban fare has resisted "culinary drift," and its culinary traditions may be one of the most "pure" Caribbean cuisines left.

J. Hugh McEvoy (Chef J.), Contributing Editor

As the Communist regime of Fidel Castro comes to its inevitable conclusion, in the near future, Cubans will be faced with a change in government for the first time since the 1950s. For the latter half of the 20th century, the politics, finances and cuisine of Cuba have been stifled by regulation and repressive ideology. As that era comes to an end, there may well be a newfound national interest in "all things Cuban."

The coming media windfall dovetails nicely with what is already a red-hot trend. Cuban cuisine is Hispanic cuisine. A recent consumer study commissioned by direct mail media company ADVO Inc. found that Hispanic-Americans spend 20% more per week dining out at casual/family, fast-food and pizza restaurants than the general market. Hispanics, specially acculturated Latinos—defined as having adapted to mainstream U.S. culture while maintaining the values of their native culture—also outspent non-Hispanics when it came to having food delivered at home or office and are twice as likely to choose a restaurant based upon the availability or receipt of coupons.

Wrapped in a visual masterpiece where the architecture and cuisine create a culinary experience, guests at Miami's Karu&Y Restaurant will have all five of their senses enlivened at this culinary destination. Karu may well be the most expensive restaurant development project in Florida's history. Combining Cuban-born chef Gerdy Rodriguez's version of Hispanic cuisine—and amazing visual elements like flowing water, frosted glass, rich colored marble and African wood—Karu&Y restaurant is the vision of Brazilian entrepreneur Cesar Sotomayor.

Chicken, pork, lobster, fish and, to a lesser degree, beef and lamb are traditional Cuban meat staples.

Unfamiliar to many Americans, upscale Nuevo Cuban cuisine is one of Karu&Y's most innovative elements. The cuisine is brought to life in Miami by Rodriguez, who was raised in Miami and perfected his trade working alongside some of the best chefs in town: at Norman Van Aken's Mundo and the former La Broche Miami. Do the super trendy culinary presentations of Miami's latest uber chef relate to traditional Cuban cuisine?

"Despite a traditional agricultural economy in which food crops have been neglected in favor of export sugar cane cash crops, Cubans have inventively combined Spanish, African and Caribbean traditions and ingredients into a unique and characteristic cuisine. Chicken, pork, lobster, fish and, to a lesser degree, beef and lamb are the meat staples. Black beans, rice, *yuca* (cassava), *malanga*

Cuban chefs from Miami's new Karu&Y restaurant offer its patrons upscale Nuevo Cuban cuisine.

(sweet potato), *boniato* (yam) and *plátanos* (plantains) are the leading legumes and starches.

"Though Cuba's political and financial difficulties have truly handicapped its culinary artists even before Castro's recent fade from power, the legalization of the dollar and the opening of privately owned restaurants known as *paladares* (literally, "palates" from a Brazilian television series in which the heroine opens a restaurant called Paladar) have sparked a renaissance of authentic *criollo* cuisine, or traditional Cuban home cooking," says George Semler. Semler has recently returned from an extended trip to Cuba. A Marine officer in a former life, Semler has studied the cuisines in Madrid and Barcelona and lived in the Spanish capital, the Basque country and Catalonia.

According to Semler, "Cuban cooking enobles lowly ingredients." The plantain, for example, or *el plátano*, has "a thousand and one lives in a Cuban kitchen." They can be cut and fried when ripe, or sliced into thin wafers and fried when green. They are often pounded and refried as *tostones* or *plátanos a punetazos* (punched plantains). Boiled, mashed, dressed with olive oil or filled with ground meat and melted cheese for a tropical sheperd's pie, the plantain is most definitely not just a banana, as it is often wrongly identified. At the *mercado agropecuario*, or farmers' market, one can find plantains, boniato, *ají cacho*, peppers, squash, tomatoes, garlic, *frijoles*, *malanga*, mamey, *guayaba*, corn and corn flour. However, the market is no "overflowing cornucopia," says George. "The essentials are there: *viandas* (tubers), vegetables and fruit. Prices reflect areas of scarcity: a head of garlic costs 10 times more than an onion; a pound of *malanga* is half as expensive as a pound of *frijoles negros* [black beans]." The traditional foods of Cuba are quite different from the lofty creations being served by Chef Rodriguez at Karu&Y. For a cuisine to move from fad to trend, it must be accepted by average Americans and become popular among average restaurants.

Such a restaurant is Bongos Cuban Café in Miami. Superstars Gloria and Emilio Estefan have partnered in opening a wonderful theme concept in one of the city's tourist areas. Serving pure authentic Cuban cuisine, Bongos also serves up the nostalgia of Havana during 1950s glory days. Every item on the menu is authentic. Speaking from personal experience, this author can say that every item is delicious. The huge success of this restaurant is proof that middle America loves Cuban cuisine.

What Makes it Cuban?

Every marketing professional agrees that Hispanic products are on trend and still growing in popularity. What sets Cuban menu items apart from Mexican, South American or even other Caribbean cuisines? Two primary influences have created the foundation of Cuban cuisine. This base was then tempered by political forces that "set the cuisine in stone," preventing the culinary drift that occurred with other Caribbean island cuisines.

First, Spain's heroic explorers discovered Cuba in the search for a direct sea route to India's spice trade. A permanent colony soon flourished. The new rulers of Cuba imported the culinary traditions and techniques of mother Spain to the New World. The modern-day foods of Cuba are founded on the traditional menus of Imperial Spain. However, these fabulous recipes and flavors were then

Stats at a Glance

$71 — The average amount spent per week by [U.S.] Hispanics on eating out and having food delivered, as compared to $59 for the general market.

$108 — The average amount spent per week by acculturated Hispanics on eating out and having food delivered—83% more than the general market.

53% – The share of Hispanics taking advantage of take-out and delivery dining options (versus 44% general market).

2.2 – The number of meals eaten or taken out by Hispanics from fast-food restaurants in the week prior to the survey. Latinos also reported an average of 1.5 meals eaten per week at casual dining restaurants with table service and less than one meal per week at a pizza restaurant.

Source: Hispanic Trends Online, hwww.hispaniconline.com

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See Food Master-*INGREDIENTS*, p. 66

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Plátanos (plantains) are among the leading legumes and starches. Appearing here as chips, they have "a thousand and one lives in a Cuban kitchen" and can be cut and fried when ripe, sliced into thin wafers and fried when green, pounded and refried as *tostones* or *plátanos a punetazos* (punched plantains), boiled, mashed, dressed with olive oil or filled with ground meat.

impacted by an unintended catalyst. That modifying factor was the foodways and flavor preferences of generations of African slaves. The vast majority of manual labor and household chores done in Cuba during the first few hundred years of its existence as a Spanish colony were performed by enslaved African laborers.

Just as the Cajun recipes made famous by Chef Emeril Laggasse are a blend of French/Arcadian techniques and African/Dixieland soul food, today's traditional Cuban recipes are a true chimera. The tried and true gourmet foods of Spain were modified by the African slaves working as household cooks. These recipes were then modified to include locally available ingredients. The result is wonderful—a robustly bright and flavorful cuisine hinting of Spain's past—yet somehow cutting edge. It is quite different from other, nearby Caribbean islands' recipes. Why is that? It may be because Cuba's cuisine has been "protected" from culinary drift.

The slow change of food preferences, recipes and techniques is known as culinary drift. No nation's foodways remain completely unchanged as time goes by. Societal influences, either internal or external, cause slow, continuous change. However, Cuba was taken over by Fidel Castro nearly half a century ago. The rigid communist rules preventing free trade, free exchange of ideas, information and travel did have one positive effect. Cuba's traditional cuisine was locked in place! The culinary traditions, flavors and recipes of Cuba may be the most "pure" Caribbean cuisine left in the world today.

There is no doubt that the regime of Castro is about end. Soon, Cuba may become a far more open and free nation. All things Cuban will indeed be in the news and on the menus of America's restaurants. Cuisine Cubano is clearly not Mexican. It is just as clearly not classically Spanish. It is an amazingly flavorful, intense yet not spicy-hot style of cooking that appeals to many Americans. No one doubts that the "Latino" trend will continue. Many older customers who find Mexican food a bit too spicy may find Cuban recipes just right. Understanding the unique flavors of Cuban cuisine, and the differences that set it apart from other Hispanic foods, will give successful culinary developers the "chef's edge." Pf

Website Resources:

www.hispaniconline.com — Website dedicated to Hispanic news and trends

www.karu-y.com — Website with sound and virtual tour of Karu&Y's front end

http://en.wikipedia.org/wiki/Cuban_cuisine — Overview of Cuban cuisine with useful links

es.wikipedia.org/wiki/Gastronomía_de_Cuba — Site in Spanish on Cuban cuisine; information varies from English site

www.PreparedFoods.com — Searchable archives of articles; type "Cuban" into the search field on the home page

www.bongoscubancafe.com — Home page of the restaurant chain

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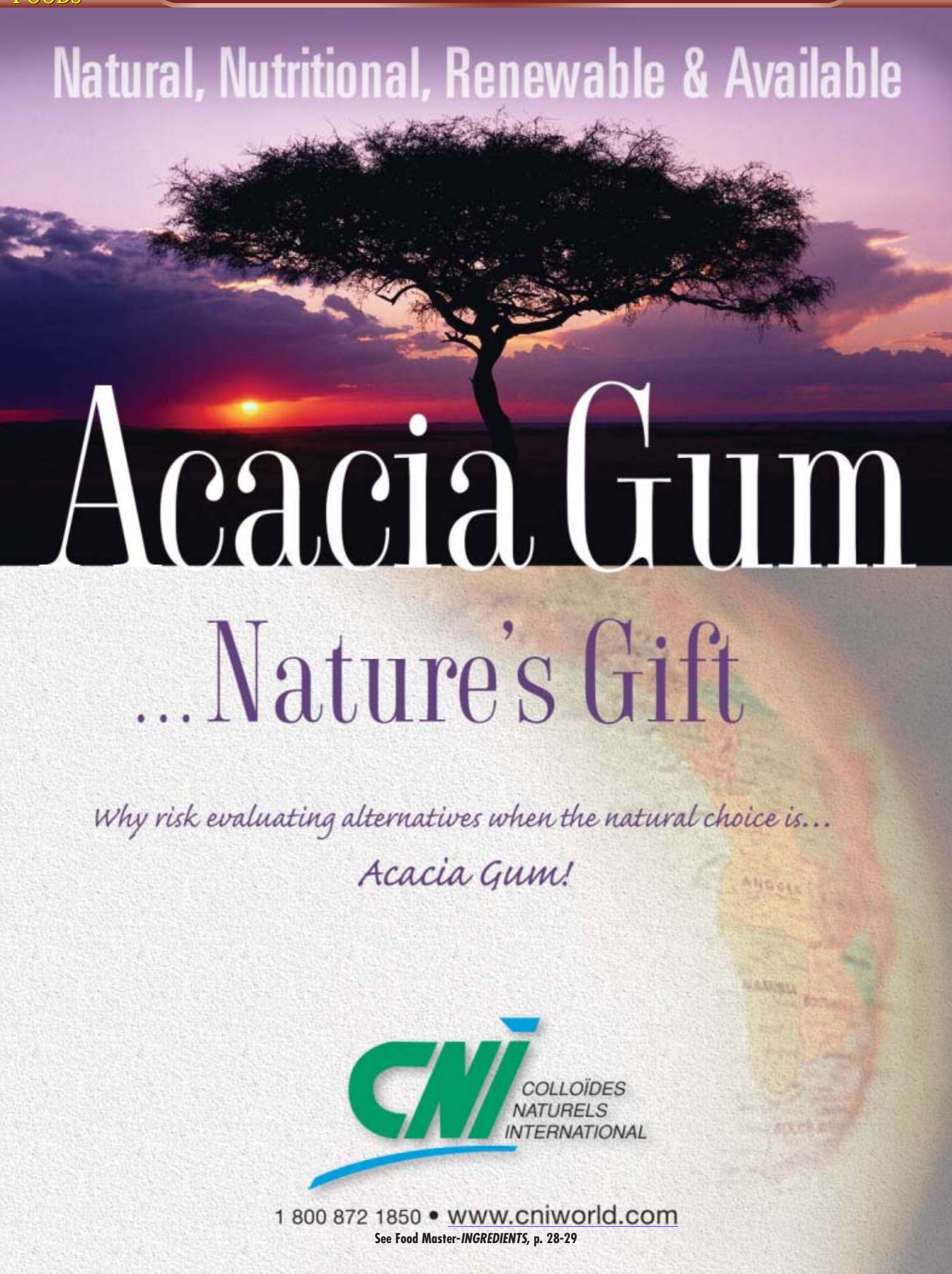


See Food Master-*INGREDIENTS*, p. 28-29

On the National Menu

Maria Caranfa, Mintel Menu Insights

PHOTO COURTESY OF ISTOCKPHOTO.COM/GEORGE MATTIE

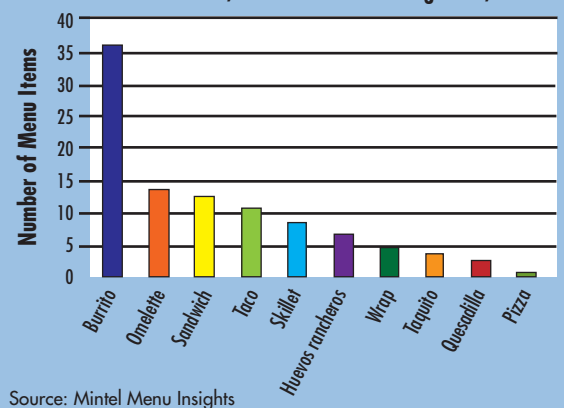
Spicing Up the Morning

What do Burger King, McDonald's, Del Taco, Sonic and Chick-fil-A have in common? All offer a breakfast burrito on their breakfast menus, and they are not the only quick-service restaurants (QSRs) serving a spicy breakfast treat. According to Mintel Menu Insights, approximately 10% of QSR chains offer a breakfast burrito, making it the second most popular breakfast item on QSR menus. Through the premiumization of quick-service menus, these dishes are expanding past the ordinary to the extraordinary.

Chick-fil-A offers a sausage breakfast burrito with chunks of pork sausage mixed with scrambled eggs, fire-roasted onions and peppers, and a blend of Monterey Jack and cheddar cheeses, all wrapped in a soft flour tortilla and served with spicy salsa.

Flying Southwest

Top 10 Menu Items with Ingredients/Flavors Reflecting Southwestern/ Mexican Influences, Across Restaurant Segments, Q3 2006



Source: Mintel Menu Insights

Quick-service menus are not the only restaurant segment spicing up the morning. Fast casual, family mid-scale, casual and fine dining chain restaurants all serve spicy south-of-the-border dishes in the morning. Mintel's research shows popular southwestern/Mexican breakfast dishes in chain restaurants include omelettes, breakfast pizzas, breakfast sandwiches, breakfast tacos and southwestern breakfast skillets. Mimi's Café serves Huevos Con Tortillas, which are breakfast tacos with three scrambled eggs, diced tomato, cheddar cheese, avocado, sour cream, fresh-cut salsa, black beans and chipotle sauce with warm flour or corn tortillas.

On a Roll

Egg rolls and spring rolls are quickly becoming staples on appetizer menus in casual dining restaurants, but contemporary egg/spring rolls are anything but Asian. The crispy starters are being filled with southwestern, southern and other American flavors. Mintel Menu Insights names the top 10 egg roll fillings as chicken, black beans, corn, spinach, cheese, onion, cilantro, pork, red pepper and avocado.

Chili's filled its Southwestern Egg Rolls with smoked chicken, black beans, corn and jalapeño Jack cheese with red peppers and spinach. All the ingredients are wrapped inside a crispy flour tortilla and served with avocado-ranch dipping sauce. During the summer of 2006, Bennigan's created promotional cheeseburger menu items ranging from a cheeseburger salad to cheeseburger egg rolls. The promotion earned Cheeseburger Egg Rolls a place on Bennigan's permanent menu. The rolls are filled with ground beef, American cheese, pickles, onions and mustard, and they are served with a side of salsa cream sauce for dipping.

While egg rolls are exploring flavors from other lands, spring rolls are sticking to their Asian roots. Spring rolls often are served chilled and as a lighter appetizer option. These light starters are filled with the fresh flavors of shrimp, cilantro, mint, corn and carrots. The Cheesecake Factory offers Vietnamese Summer Rolls, which are chilled, delicate rice paper rolled around asparagus, shiitake mushrooms, carrots, rice noodles, green onion, cilantro and shrimp. pf

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Maintaining Textural Integrity

Preventing moisture loss in foods is one key to their longevity. Gums, starches, emulsifiers and proteins assist with texture in ways where the mechanism is not always commonly understood.

Paula Frank, Contributing Editor

Coarse, granular ice cream. Dry, stale, crumbly bread. Chewy snack bars that are hard as rocks. These are not the products that left the manufacturers' doors shortly after they were produced, but time has taken its toll as environmental factors have exerted their influence. Too much moisture or lack thereof causes a range of texture-related issues—from drying and caking to stickiness and gumminess. Although not the only factor, moisture migration often is the culprit in texture degradation, whether or not the product is frozen, refrigerated or shelf stable.

Dehydration from moisture loss is certainly a major concern for product developers, but there are other factors that negatively impact texture over the course of a product's shelflife, depending on the product in question. Sugar crystallization can adversely affect the texture of dairy foods and confectionery-based products. Foods formulated as emulsions can separate, coated items such as nuts and cereal can lose their crispness and items such as puddings, sauces, soups and gravies can exhibit weeping, or syneresis.

The list of potential textural defects that traverses all product categories is endless. As such, product developers must be aware of all of the complex matrices (i.e., chemical composition, ingredient interactions, atmosphere during storage, processing parameters) of a food's system, so that they can ensure the delivery of high-quality products with extended shelflife that consumers expect.

Texture shelflife of many products is now improved through use of hydrocolloids, emulsifiers and other ingredients, depending on the application.

Ice Cream—Hold the Ice

Smoothness is one of the key parameters used in evaluating the texture of ice cream. This attribute is a "hallmark of quality" often judged by the absence of noticeable ice in the product, notes Bruce W. Tharp, Ph.D., Tharp's Food Technology and adjunct professor of food science at Penn State University. According to Tharp, descriptive terms applied to ice cream's texture include icy/coarse, sandy and greasy. Sandiness, which may be perceived when lactose crystallizes, is rarely an issue today because ingredients such as stabilizers and sugar alcohols prevent lactose nucleation from occurring. Lactose crystals cannot form if nuclei are not present. A greasy mouthfeel can occur when large agglomerates of fat are present—a result of the mixing and freezing process. Iciness, however, is the most common textural defect associated with frozen desserts such as ice cream.

"Fluctuation in storage and distribution temperatures, also known as 'heat shock,' damages the quality of ice cream," explains Linda Dunning, technical application director for a global ingredients company. "As temperatures increase, the small ice crystals that manufacturers work so hard to create

Troubleshooting Guide

Product Category	Symptoms	Possible Causes	Changes to Consider
Soups, sauces, gravies	Syneresis, freeze/thaw instability	■ Moisture migration ■ Starch degradation	■ Add substituted (stabilized) starch
Glazes, frostings, icings	Cracking, formation of a hard shell	■ Dehydration	■ Add modified starch with better water holding capacity ■ Add hygroscopic sugars such as HFCS, brown sugar, fructose or high-DE syrups ■ Use hygroscopic sugar alcohols (e.g., sorbitol, xylitol or maltitol)
Dairy products	Syneresis, weeping	■ Poor freeze/thaw stability ■ Colloidal system breakdown ■ Increased water mobility	■ Use substituted starch ■ Decrease shear during processing ■ Increase starch level ■ Increase cooking time and/or temperature
Hard candies	Too brittle	■ Structure lacks adequate water	■ Select a modified starch cross-linking (i.e.,with appropriate chemical with more water-holding capacity) ■ Adjust water
Fondants and crèmes	Gritty, grainy texture	■ Crystal growth during storage	■ Add starch, gelatin or protein to retard crystallization ■ Decrease amount of crystallizable form of sugar alcohol
Bakery	Product lacks moistness	■ Moisture migration out of product	■ Increase water content ■ Select a substituted or waxy starch ■ Add a humectant (e.g., sugar alcohol, fibers or gums)

Source: *Eagan Press Handbook* series published by the American Association of Cereal Chemists Inc.: *Sweeteners: Alternative* by Amy L. Nelson, 2000; *Sweeteners: Nutritive* by R.J. Alexander, 1998; *Starches* by David J. Thomas and William A. Atwell, 1999

The problem-solving tips listed in the troubleshooting guide merely provide an example of some of the issues that a product developer must consider when resolving textural defects.

during processing melt. Then, as the temperature decreases, that melted water refreezes, but not as small ice crystals. Instead, the water refreezes onto existing larger ice crystals. As a result, the small, desirable ice crystals are replaced by larger ice crystals that can be detected in the mouth. Initially, the ice cream containing discernable ice crystals will be described as 'coarse.' But as the ice crystals continue to grow, the ice cream will become known as 'icy.'"

A stabilizer system comprised of gums, emulsifiers or often a proprietary mix of both types of ingredients can help achieve a desirable ice cream texture. For instance, locust bean and guar gums work synergistically with one another and are frequently used as viscofiers in ice cream blends. Hydrocolloids can form gel-like structures and control water mobility during freeze/thaw cycling. "Most hydrocolloids and blends of hydrocolloids are used at levels below 0.20% in the finished product," says Dunning. "While this contributes some viscosity, the majority of viscosity contribution and water immobilization occurs during freeze concentration. Water is removed from the system as ice forms, resulting in a concentration of ingredients into the portion of water that has yet to freeze. As the hydrocolloids concentrate, they have a much greater impact in increasing the viscosity of the remaining solution."

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See Food Master-*INGREDIENTS*, p. 174

Jennifer Lindsey, dairy industry manager of a global supplier of stabilizers and emulsifiers, provides an example of how one of her company's patent-pending stabilizer blends delivers both direct and indirect benefits to an ice cream's finished texture. "This stabilizer blend actually controls the growth of ice crystals over time, which in turn prevents the quality deterioration of ice cream throughout its shelflife. As an added benefit, both internal tests and customer feedback have shown that butterfat may be reduced by 1% to 2% in the overall ice cream formulation while actually maintaining the perception of the original fat level and, in some cases, improving the quality perception of the finished product."

Non-fat and low-fat frozen desserts are common in today's health-conscious market, as are no-sugar-added blends. Polydextrose adds creaminess and provides heat-shock stability in frozen desserts such as these. "It is the goal of the developer to find a balance between the ingredients that highlight the desirable characteristics of the finished product, such as heat-shock protection or fat replacement, while minimizing the undesirable characteristics that these formulations might impact, such as off flavors or gumminess," says Dunning.

Bread for the Ages

When a customer expressed interest in a shelflife of 18 months for a bakery product, Celeste Sullivan, senior applications specialist for a manufacturer of specialty starches, could hardly conceal her surprise. Baked goods include a wide range of products including breads, bars, muffins and cookies, all of which can be par-baked, fresh or frozen. Temperature cycling causes moisture migration and loss, which in turn decreases shelflife, notes Casey Lopez, associate scientist and colleague of Sullivan.

Stabilizers, such as xanthan gum, can be useful in refrigerated and frozen dough.

PHOTO COURTESY OF ADM

Product development of bakery items has become increasingly challenging, as customers demand longer shelflives for their products.

Instant starches are commonly used for their solubility (i.e., hydration) properties and moisture binding capability, but not all types of instant starch perform equally. In a cake with icing, moisture can migrate to the surface, causing the

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See Food Master-*INGREDIENTS*, p. 98

icing to fall off, notes Tonya Armstrong, senior applications scientist and fellow colleague of Sullivan and Lopez. When the proper starch is used, the cake stays moist and the icing does not crack and fall off.

"Traditional drum-dried instant starches contain fragments of starch, but an instant starch developed with new technology does a better job of binding moisture, because its granules are intact," explains Sullivan. "Intact-granule instant starches are physically and chemically modified in such a way as to get granule integrity," adds Lopez. "These starches become fully hydrated during mixing, hold on to water during baking, stay intact during the hold time and withstand the harshness of the baking process. In addition, intact-granule instant starch works well with mold inhibitors and doesn't overstabilize the system."

Preventing overstabilization is every bit as important as stabilization is to a product's overall textural quality, as the former can produce undesirable effects as well. For instance, too high of a level of gums and starches can overstabilize a system, resulting in gummy texture, large cell structure, tunneling and shrinkage, particularly in a chemically leavened product, notes Armstrong.

Fibers, sweeteners and enzymes are also commonly used to preserve the freshness of baked goods, as are wheat protein isolates (WPIs), which can be used to protect a product during freezing. "WPIs are lower molecular weight, film-forming proteins, which allows them to form a protective barrier around a product's components to prevent ice crystal damage," says Brook Carson, technical product manager for a manufacturer of a diverse range of food ingredients. The isolates that are derived

Destabilization of an emulsion occurs in various ways. During flocculation, clumping occurs without a disruption to the interfacial film separating phases (e.g., aqueous and lipid). With coalescence, the interfacial film is disrupted as droplets collide and form a separate phase. Flocculation is reversible; coalescence is not.

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See Food Master-*INGREDIENTS*, p. 95

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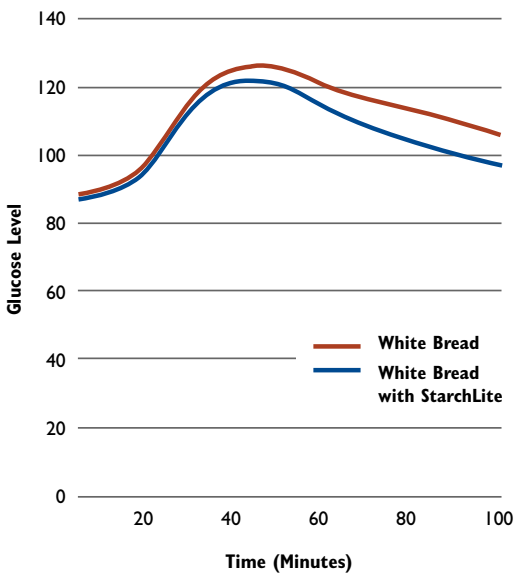

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from wheat protein have thermal properties that differ from other types of wheat protein, which makes them more effective in protecting baked goods during frozen storage.

Enzyme preparations also are being developed to counteract the compounds that interfere with dough formation and elasticity, while other types interact with compounds that cause staling. Traditional enzymes, particularly those derived from bacterial amylase, produced breads that developed gummy textures over time. Newer enzymes are not only helping to extend shelflife, but improving quality in bread volume, appearance and softness as well as dough machinability.

Battling Complex Forces

Emulsions are formed when one immiscible phase is dispersed in another through mechanical action such as homogenization. When an emulsion breaks, the two phases separate. Destabilization of an emulsion can occur in various ways. Creaming is a gravitational separation of phases (i.e., oil phase floats to the surface). During flocculation, clumping occurs without a disruption to the interfacial film, whereas with coalescence, the interfacial film is disrupted as droplets collide and form a separate phase. Flocculation is reversible, while coalescence is not.

The complexity of emulsion stability is compounded by the many factors that influence it. Aside from interfacial tension, emulsion stability is affected by the viscosity of the continuous phase and density differences between phases (e.g., ester gum added to flavor oil in beverages to "weigh it" and prevent ringing). In addition, droplet size in the internal phase (the smaller the size, the more stable the emulsion), temperature extremes and the presence of solids (finely divided solids "wetted" equally well by both phases at the interface will stabilize the emulsion, whereas a higher percentage of solids dispersed in the internal phase will destabilize the emulsion) also affect viscosity.

The reduction of interfacial surface tension is just one possible function of an emulsifier. Other functions associated with this class of ingredients are varied and application specific. A product developer's choice of an emulsifier or combination of such is often based on factors such as the complexity of the food matrix and other processing-related issues. For instance, "Surfactants stabilize oil-in-water emulsions to give them stability to phase separation during temperature fluctuation over time," says Tyre Lanier, Ph.D., professor of food science, North Carolina State University.

Starch retrogradation that leads to crystallization is another factor that can cause undesirable textural characteristics in the form of either staling or syneresis. Use of unmodified starches or those that have the incorrect type

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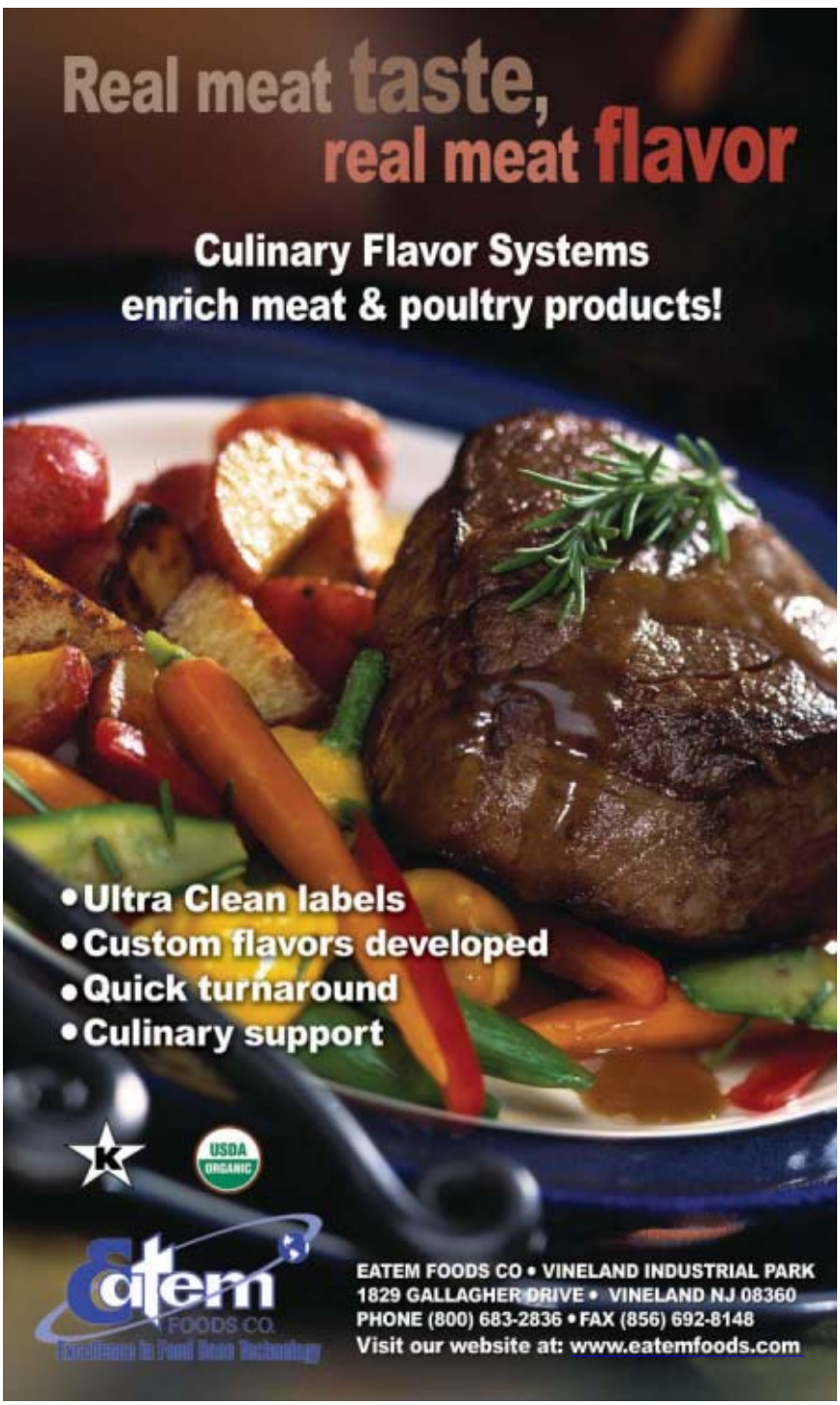
of chemical modification often will result in dramatic textural changes in frozen/thawed puddings, sauces and even gelled products such as imitation crabmeat. "Proper modification of the starch can add side chains that create steric hindrance to tight packing of starch molecules (i.e., retrogradation) that would lead to the release of water and textural collapse," explains Lanier.

There are many other examples of foods that are subject to textural degradation and just as many solutions that can potentially mitigate the damage. What the product developer must keep in mind is that processed foods are complex systems composed of ingredients that not only interact with one another, but with the environmental conditions that a product is subject to throughout its shelflife. Processing conditions are also critical to the quality of a product's textural integrity and must be monitored closely to ensure that optimal conditions are met.

"The texture of a food is usually the result of a somewhat delicate balance of forces between macromolecules such as starch and proteins as they interact with water and as they are modified by salts, sugars and other low molecular weight compounds," explains Lanier. Liquid foods with noticeable viscosity and solid, or viscoelastic foods (such as gels or baked goods), are particularly sensitive to this balance of forces. Understanding the underlying basis for how the macromolecules of a particular mixture subjected to smaller molecules in a particular process impart texture in the finished product is crucial to product control and shelflife.

Choosing the right balance of functional ingredients may be the key to producing that creamy, high-quality ice cream versus one that is icy; that moist bread versus one that is dry and crumbly; that sauce that does not separate; or that fondant that is not coarse and gritty. pf



Website Resources:

www.aaccnet.org — American Association of Cereal Chemists Inc.; publisher of *Eagan Press Handbook* series of books covering basics of food ingredients, applications and processes

www.cargill.com — A series of press releases explains the applications of various new ingredients from one supplier

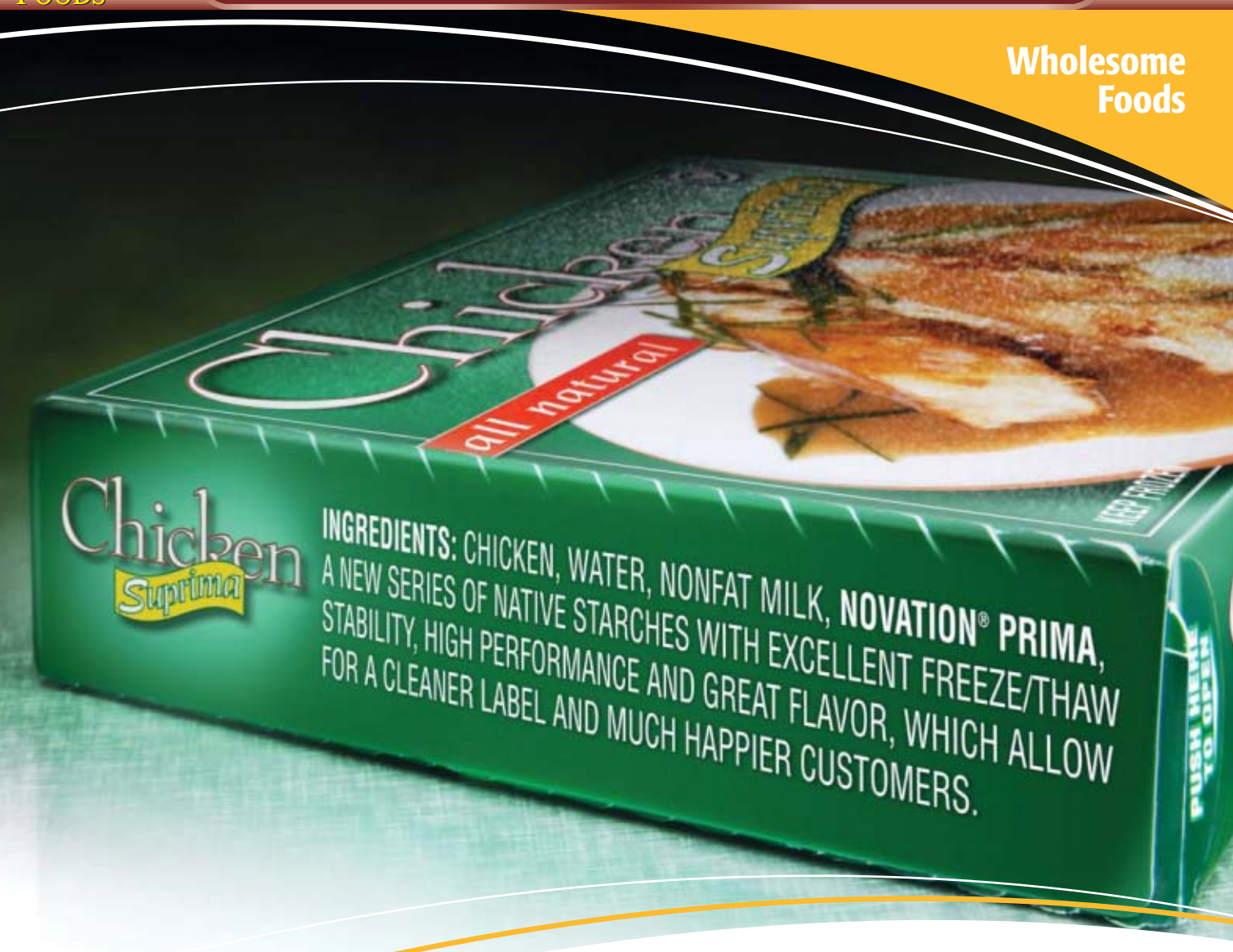
http://drinc.ucdavis.edu/dfoods10_new.htm — A treatise on the stabilization of frozen foods

www.admworld.com — Ingredients relevant to various applications are listed, a database allows comparisons between ingredients

www.grainprocessing.com — Defines the benefits of certain generic ingredients such as maltodextrin as well as how ingredients can be used

www.danisco.com — Searchable site with links on to industry articles; for example, one can search for articles on sweeteners

www.stevenyoung.net — Steven Young Worldwide, an industry consultant, Dairy & Food Technologies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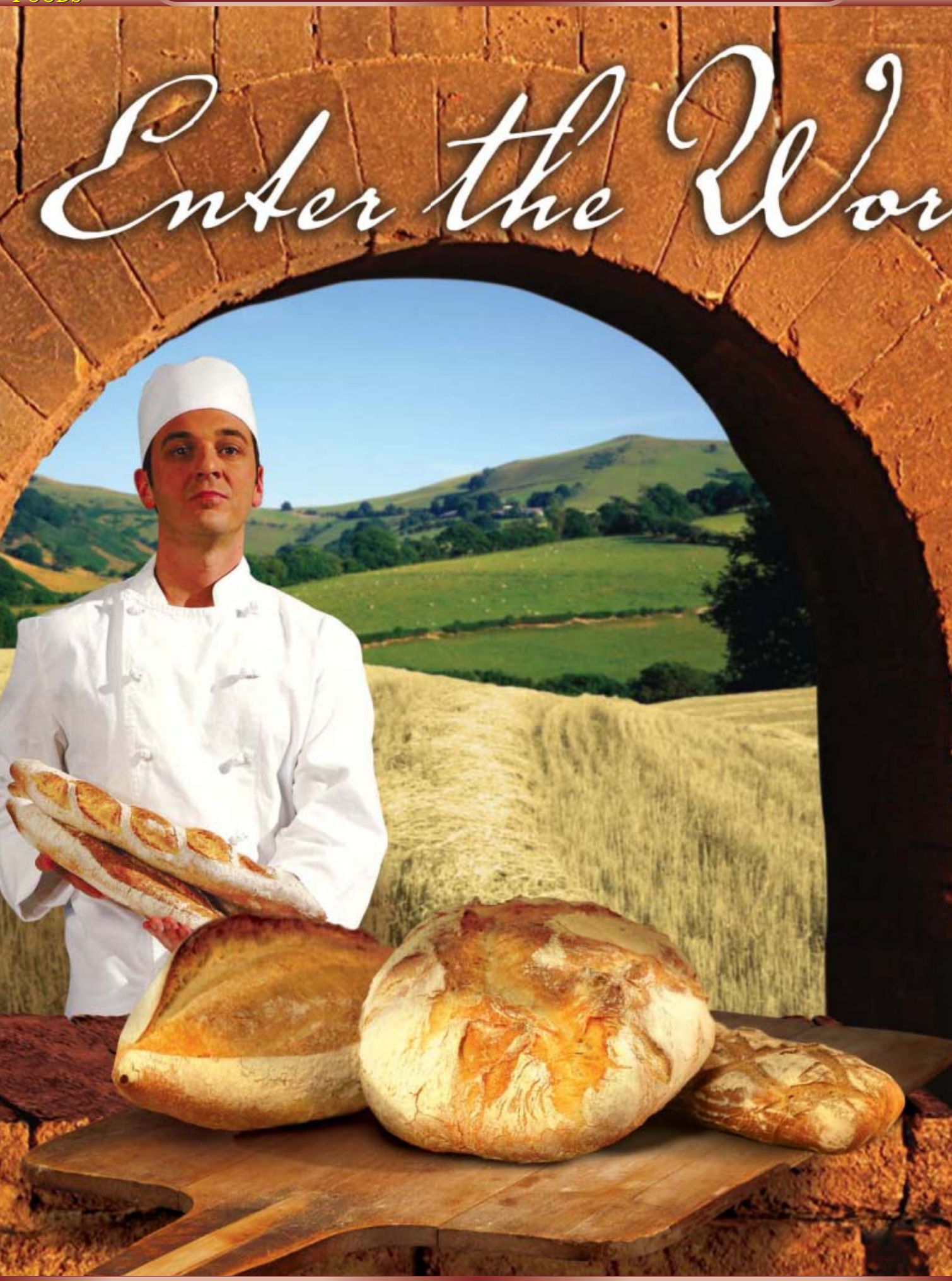

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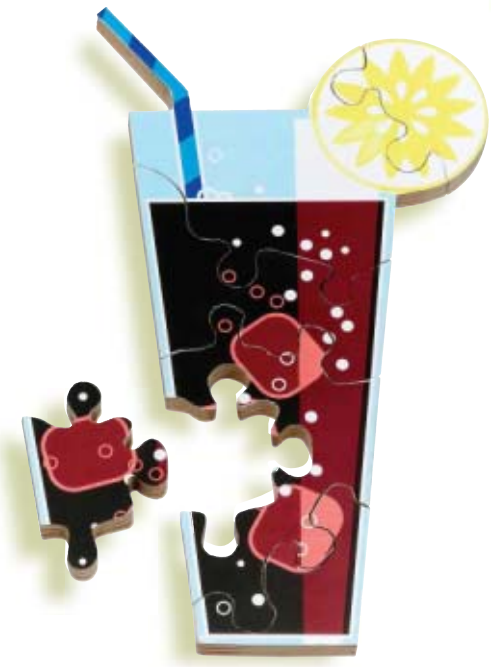


Aspartame is made of amino acids, nature's building blocks of life. During digestion, the human body breaks down protein-rich foods, such as meat, fish and dairy, into amino acids. These are then reassembled into different proteins the body needs to grow and function. Aspartame is made from two of these amino acids. Amino acids are a natural part of our diet from our very first days, and the two amino acids in aspartame are also in breast milk.

www.aboutaspartame.com

To review Ajinomoto's new consumer brochure, "Aspartame: Sweetness from Nature's Building Blocks," and other educational tools, visit www.aboutaspartame.com.

For more information on aspartame, please contact:

Ajinomoto Food Ingredients, LLC
8430 W. Bryn Mawr Avenue, Suite 635, Chicago, IL 60631
Tel: 773-714-1436 Fax: 773-714-1431

AJINOMOTO®

Sweetening Functional Foods

Sweetness remains a key desirable trait in many foods and beverages. Formulation options range from unusual natural alternatives to tried and true additives. Their total properties are crucial.

Elizabeth Mannie, Contributing Editor

PHOTO COURTESY OF THE NATIONAL HONEY BOARD

Honey's flavor is a variable when using it as a sweetener. Its sugar composition (e.g., sucrose, fructose and glucose) needs to be taken into consideration in deciding its application. In cereal bars, using only sucrose may result in a harder product.

The "functional foods" category, while not yet clearly defined, is quickly growing, with recent reports showing it to be one of the top food trends in 2007. Functional foods can range in shape and specific health function and may include natural and organic foods, protein cereal bars, fruit smoothies, yogurt products, diabetic items and other medical foods. The best type of sweetener for the job depends on labeling and nutrient requirements, product characteristics and functionality requirements.

Sweetener Functionality

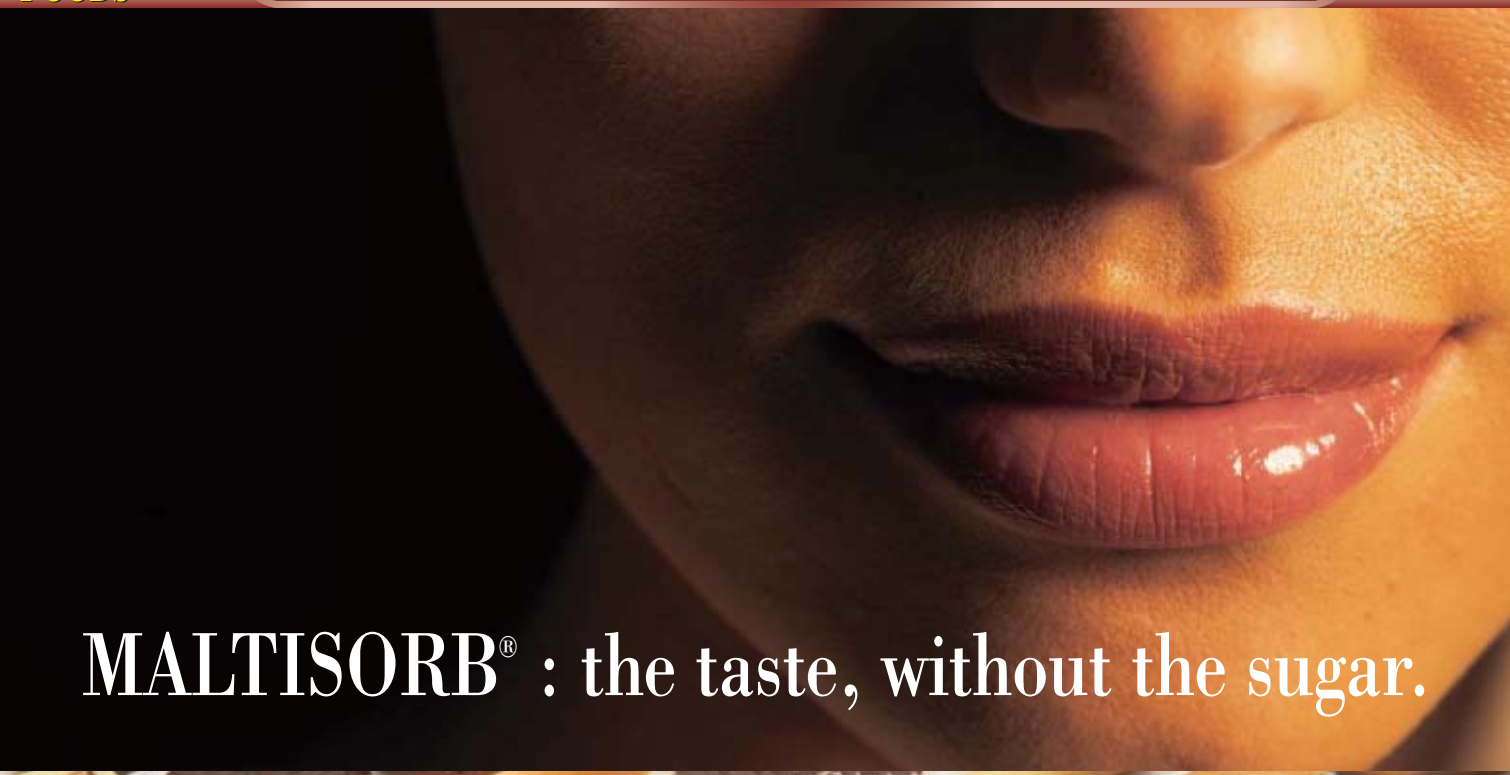
Sucrose is a multi-functional ingredient. Available in a variety of forms, it can be used in many different food products. Sucrose has a range of properties that, either individually or in combination with other ingredients, makes it an important ingredient in modern food production. Its functions include sweetness, flavor, bulk, texture, viscosity control, aroma, shelflife, fermentation, freezing point depression and color.

Sugar (sucrose) is not easy to replace; therefore, the sweetener choice for any product is based on the formulation requirements, which may range in flexibility. For example, the sweetener requirements will differ according to whether a product is low-carb, all natural, non-cariogenic or whether it has nutritional properties like high-protein or no-sugar.

The method of sweetening also depends on the desired textural properties of the product. "The classic example is a cereal bar. In a product such as this, the sweetener system can sometimes be up to 50% of the formula. Sugar is not good at maintaining humectancy or viscosity, so when using all sugar for the sweetener, the product will be crunchier. If softness is desired, then both a starch-based (corn syrup) and a sugar-based sweetener are needed," states Bob Hansen, manager of technical service at a popular supplier.

All Natural and Starch-based Sweeteners

Starch-based sweeteners such as corn syrup are used to build viscosity, maintain humectancy and softness in baked goods, and for browning. They have approximately the same number of calories as sucrose. If a soft granola health type bar is desired, then a starch-based sweetener like corn syrup is needed. However, if the product is to be considered all natural, corn syrup is likely not an option, because it typically is made from GMO corn using mineral acids and enzymes from GMO organisms (as well as sulfur dioxide-activated carbon and ion exchange). It may be useful to remember that the term "natural" is not regulated.



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See Food Master-*INGREDIENTS*, p. 167

ROQUETTE

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"For a product requiring a natural or organic sweetener, malt extract, starch or grain-based sweeteners such as rice syrups, tapioca and tapioca dextrin are good choices," offers Hansen, supplier of these products. "The growth in demand for natural and organic sweeteners parallels the growth of the organic food industry." The organic category includes a variety of functional foods as well as other types of products searching for natural labels.

Juice concentrates such as apple, pear, white grape, peach and pineapple often are used to sweeten foods and beverages.

"Malt extract is the original starch-based sweetener and has been around for hundreds of years. The only ingredients are barley and the water added to it. Barley malt extract can be made 100% organic," adds Hansen. Malt, tapioca and rice syrups and extracts are other natural starch-based sweeteners that can also be used in ice cream and candy to build viscosity and control crystallization. Ironically, even ice creams and candies can be considered nutritionally functional in some cases.

As starch-based compounds, these sweetener syrups are long polymers of glucose units of different chain lengths as well as the sugars fructose, glucose and maltose. The chain length and composition of these starch-based sweeteners control the level of sweetness, viscosity, and the ability to control crystallinity and water activity. Rice and tapioca syrups and extracts have similar properties.

Showcase: High-intensity Sweeteners; Bulking Agents and Dietary Fibers and Fruit-based Sweeteners

Food developers looking for sweeteners with a genuine sugar taste may be interested in a **no-calorie sweetener made from sugar**. SPLENDA® sucralose, made by Tate & Lyle, has a great sugar-like taste and is exceptionally stable, retaining its sweetness through all commonly used food and beverage manufacturing processes as well as during the shelflife of finished products. Its versatility enables manufacturers to offer consumers a far greater range of great-tasting, reduced-calorie products than ever before. SPLENDA is a trademark of McNeil Nutritionals LLC, Tate & Lyle, 866-772-7347, www.tateandlyle.com

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An **innovative sugar replacement system** that delivers the taste and texture of sugar in healthy food formulations with the benefit of reduced calories and sugar and added soluble fiber in one product is available in the form of POLYSORB® FM. This product line, from Roquette America Inc., is a unique family of polyglucitol and maltitol syrups that can be used in a variety of good-for-you food applications, often without the need for high-intensity sweeteners. POLYSORB FM offers unsurpassed healthy performance from the production line to the consumer's table! Roquette America Inc., Ben Moser, 800-553-7053, ben.moser@roquette.com, www.roquette.com

New and versatile blueberry formats allow formulators of prepared foods to add **natural sweetness and real fruit flavor bursts** to baked goods, jams and fillings, snacks, marinades, dairy, juices and other beverages. Plump, delicious, sugar-infused, osmotically preserved blueberries provide moisture and intense flavor. Easy to formulate, cultivated highbush blueberries are available year-round fresh or dried, freeze-dried, as purée, concentrate or juice. Consumers consider blueberries a value-added ingredient because they are linked to heart health, anti-aging properties, cancer prevention, improved eyesight and better memory. U. S. Highbush Blueberry Council, Thomas J. Payne Market Development, 650-340-8311, bberry@blueberry.org, www.blueberry.org

Many healthier products feature ingredients to improve health. To that end, GTC Nutrition offers NutraFlora® short-chain fructo-oligosaccharides (scFOS®) **prebiotic fiber** as an ingredient solution that is uniquely capable of promoting bone, digestive and immune health by improving the absorption of calcium and maintaining healthy digestive and immune functions. NutraFlora also provides many positive functional benefits including adding fiber, enriching flavors, improving moistness, lowering carbohydrate content and increasing the shelflife of products. GTC Nutrition, John Musselman, 303-216-2489, generalinfo@gtcnutrition.com, www.gtcnutrition.com

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Comparison of Polyol Properties

	% Relative Sweetness	Calorie Content (US) Kcal/g	Laxation Threshold (g/day)	Molecular Weight
Sucrose	100	4	>100	342
Xylitol	100	2.4	50 to 90	152
Maltitol	90	2.1	60 to 90	344
Erythritol	60 to 70	0.2	125	122
Sorbitol	60	2.6	50	182
Mannitol	50	1.6	20	182
Isomalt	40	2	50 to 70	344
Lactitol	30 to 40	2	20 to 50	362

Source: SPI Polyols Inc.

Choosing the right polyol is based on understanding the traditional carbohydrate. Since polyols are derived from corn syrups and sugars, they have a similar molecular weight and functionality.

Typically the more refined the syrup, the cleaner the flavor and the fewer other components present. For instance, malt extract contains approximately 8% protein on a dry basis as well as a lot of vitamins and minerals. In the process of making malt extract, a lot of the components of the grain are carried through to the finished extract.

Brown rice syrup also contains vitamins and minerals but not to the extent of the malt extract. Tapioca extract is cleaner yet. The more refined the natural product, the closer it is to its conventional counterpart.

If an all-natural sweetener with the properties of sucrose is desired, evaporated cane juice can be used and functions as sucrose. Sucrose is not a reducing sugar, so it is not the best on its own for browning. "Starch-based sweeteners like the tapioca syrups and malt extracts have reducing ends; in fact, malt is the best ingredient for browning," says Hansen. When using an artificial sweetener, there are usually no browning functions.

Other all-natural options for sweetening include fruit, honey and molasses. "Honey has limitations based on its

Showcase: continued

A family of internationally approved **bulk sugar replacers/nutritional sweeteners** from Palatinit is derived exclusively from beet sugar and is similar to sugar in sweetness, taste and technological properties but with half the calories. ISOMALT brand variants can replace sucrose 1:1 in terms of bulk, texture, volume and shelflife in products such as ice cream, cereal, fruit bars and jam, while reducing their glycemic effect. In baked goods, ISOMALT does not react with amino acids and thus is not involved in Maillard reactions. No caramelization or other discoloration develops during melting, extrusion or baking processes. Palatinit of America, Renee Tallman, 973-539-6644, renee.tallman@palatinit.de, www.palatinit.com

Cherries are emerging as **the newest "superfruit,"** packed with powerful antioxidants that offer a wide range of health benefits. Commonly enjoyed in dried, frozen, juice and concentrate form, tart cherries are available year-round and are a versatile, healthy ingredient. Consumers and food manufacturers are adding cherries to other fruits and juices for great-tasting, good-for-you smoothies, muffins, snacks and salads. Great cherry usage ideas and recipes are available at www.choosecherries.com. Cherry Marketing Institute, 312-988-2043, info@choosecherries.com

Consumers love the taste and the **natural image of honey**. They perceive a higher value for foods that contain honey. Honey's roles as a humectant and as an antimicrobial agent add shelflife to foods. The National Honey Board provides information and usage ideas geared to the food processing industry. Please visit its website for substitution charts, technical information, market research, industrial applications, new product ideas and more. The National Honey Board, Charlotte Jordan, 303-776-2337, charlotte@nhb.org, www.honey.com/foodindustry

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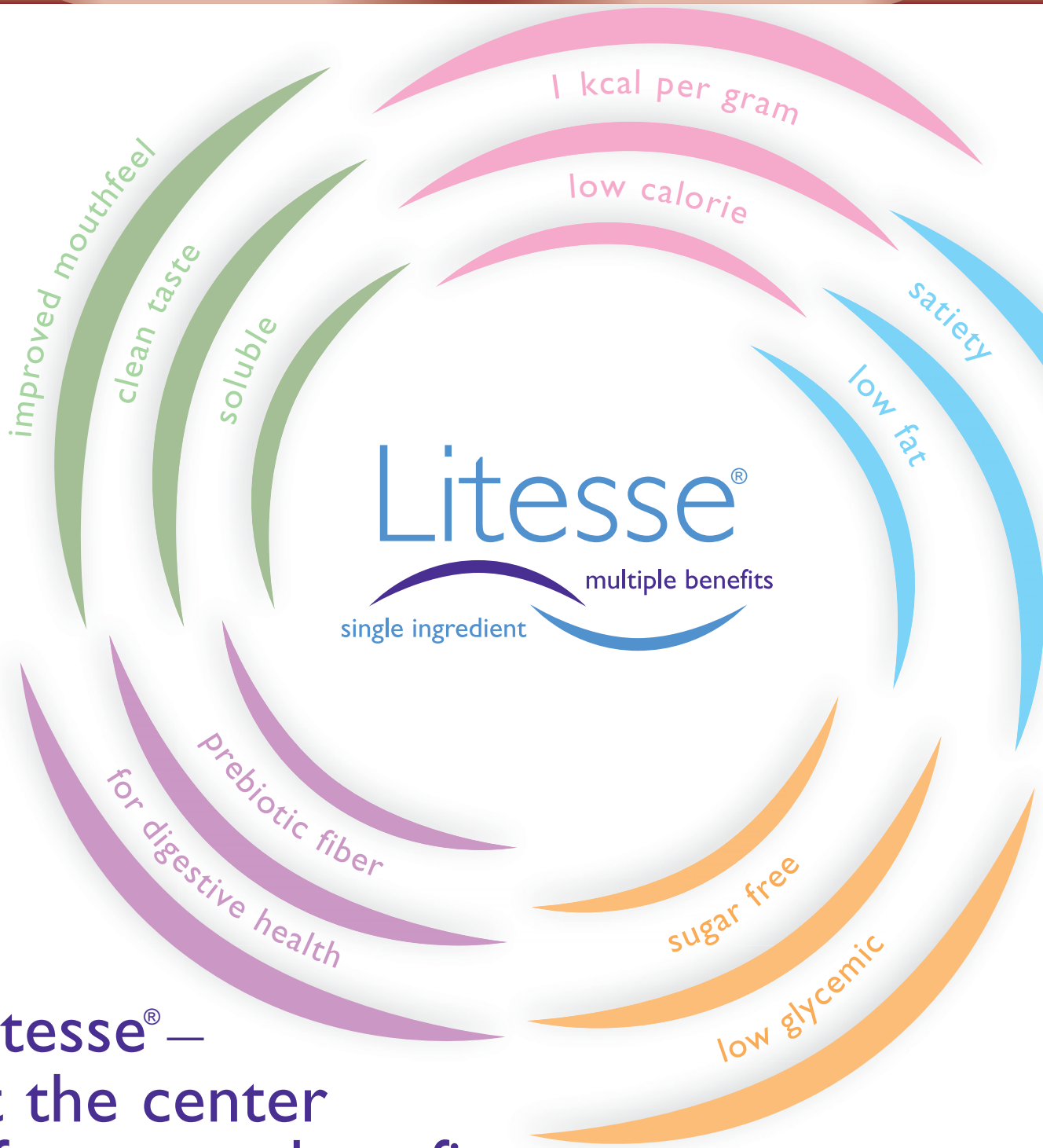

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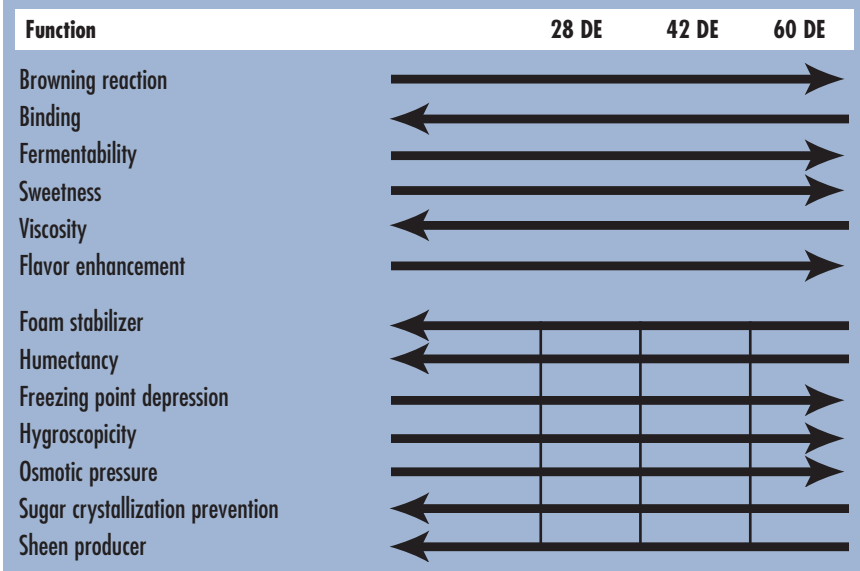
Syrup Properties as Related to Conversion



Source: Briess Malt & Ingredients Co.

Browning reaction, fermentability, sweetness, flavor enhancement, freezing point depression, hygroscopicity and osmotic pressure all increase with greater dextrose equivalent (DE). Binding, viscosity, foam stabilization, humectancy and prevention of sugar crystallization and sheen production all decrease with greater DE. DE defines to what level of enzyme hydrolysis a starch-based sweetener has been processed.

sugar profile (sucrose, fructose and glucose). It does have some browning capabilities and is okay for building viscosity, but is not as good as a low-DE (dextrose equivalent), starch-based sweetener," offers Hansen. The DE defines to what level of enzyme hydrolysis a starch-based sweetener has been processed. Honey is similar to malt extract functionally, but the honey flavor may or may not be desired. Honey often is used in combination with a cleaner starch-based sweetener.

Fruits and Juices

Fruits and fruit ingredients also are used for sweetening foods. Fruits contain fructose (often referred to as "fruit sugar") and sometimes glucose, providing sweetness in a formulation. "Juice concentrates such as apple, pear, white grape, peach and pineapple are often used to sweeten energy bars, fruit bases for yogurts, fruit smoothies, fruit drinks and baby food," says Mabel Yawata, R&D manager at a well-known fruit supplier.

The advantages of using fruit as a sweetener are in the labeling and marketing areas. Claims for "no sugar added" and "all natural" often are an option. "Fruit on a label attracts consumers that do not want refined sugar, are health and fitness concerned and those that want to increase their fruit content. In addition to sweetening, fruits can add flavor, color and other nutrients including vitamins and antioxidants," addsYawata.

An Intense Experience

While a natural sweetener can be the perfect ingredient for a product, dietary guidelines recommend reducing sugar and calories and increasing fiber. Because sugar- and starch-based sweeteners play such important roles in a formula, their replacement requires care-

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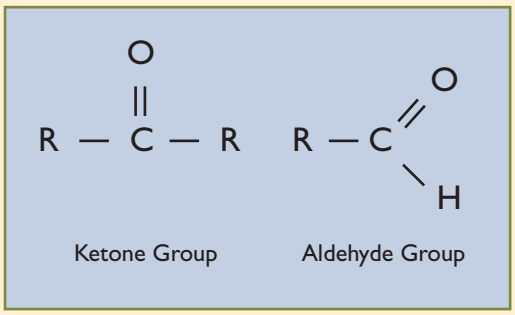
What Makes a Reducing Sugar?



Reducing sugars have either a free aldehyde or a ketone group as part of their molecular structure. Glucose and fructose are reducing sugars, while the disaccharide sucrose is not.

ful manipulation to ensure that all of the performance criteria are met. The best solutions often are a mixed ingredient approach.

In essence, high-potency or high-intensity sweeteners provide sweetness without bulk and without major impact on calories. High-intensity sweeteners have much greater sweetness than sucrose and often are synthetic and non-nutritive; therefore, they are not a good option for organic or natural labels. However, they are a perfect sweetener for beverages.

"Sweetening solutions in liquid products such as soft drinks or coffee sweeteners are simple in that a high-potency sweetener (or combination) can be used, water providing the bulk phase. In solid foods, replacing the bulk is done with other ingredients," states Helen Mitchell, director of applications for a well-known supplier.

Functional foods such as diabetic items frequently use high-intensity sweeteners. For example, aspartame is 200 times sweeter than sucrose, and very little is needed to replace sugar. Aspartame contains 4Kcal/g just like sugar, but it does not contribute significantly to calories in a formulation because just a small quantity is used.

Acesulfame potassium (ace-K), another high-intensity sweetener, also is approximately 200 times sweeter than sucrose, contains no calories and is also used widely; it often is blended with aspartame or other sweeteners for better flavor. Sucralose is a sugar-derived, low-calorie sweetener that is highly stable under processing conditions and is approximately 600 times sweeter than sucrose.

If a manufacturer is trying to comply with a natural or organic label, the high-intensity sweeteners may not be of help. *Stevia rebaudiana* is a shrub in the sunflower family.

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The glycosides found in the leaves can be up to 300 times sweeter than sugar. Stevia is widely used in Japan as a sweetener. Stevia is an interesting sweetener, but of limited use in the U.S. The FDA states that stevia is not an approved food additive or affirmed as GRAS. According to the FDA, available toxicological information on stevia is inadequate to demonstrate its safety. However, dietary supplements (DS) are not subject to food additive regulations, so stevia often is found in DS formulations.

Choosing Polyols

Polyols are carbohydrates derived from sugars but not metabolized by humans in the same manner as sugar. Considered sugar alcohols, their chemical composition resembles both sugar and alcohol. As sugar-free sweeteners, polyols have fewer calories but are used in the same amounts as sugar in a formula.

"Polyols fit into the functional foods category very well," states Pete Jamieson, manager of applications research at another well-known supplier. "Not only do they not significantly decrease blood glucose or insulin levels, allowing diabetics to better balance their diets, they are also lower in calories. Furthermore, polyols provide the bulk that is significant to making the new generation of functional foods look more appealing and taste great. Without that, it doesn't matter how nutritionally beneficial a food is for the consumer—if it doesn't taste good, they will not buy it a second time."

With no off-flavors and stable at high temperatures, polyols work best in applications where bulk is needed to maintain the finished product's integrity. One example would be frozen desserts such as ice cream or sorbet, where the bulk of the carbohydrate dictates the final freeze point of the product. The freeze point consequently affects the texture and shelflife. Other examples are baked goods such as cakes or cookies where the bulk impacts their volume or spread, overall taste, texture and appearance.

Choosing the right polyol is based on understanding the traditional carbohydrates (corn syrups, sugars) being replaced. Since polyols are derived from corn syrups (in the U.S.) and sugars, they have a similar molecular weight and functionality. For example, when using a 63DE corn syrup in an application and looking for a polyol that matches it in function and carbohydrate distribution, a maltitol syrup or polyglycitol syrup would work. If using a disaccharide like sucrose, looking at polyols with similar function and molecular weight such as lactitol, isomalt or maltitol would be good choices. Monosaccharides can be replaced with erythritol, mannitol, sorbitol and xylitol. These are rules of thumb, and one must understand that

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PREPARED FOODS

Malt, tapioca, and rice syrups and extracts are other natural starch-based sweeteners that can be used in ice cream and confectionery to build viscosity and control crystallization.

PHOTO COURTESY OF NIELSEN MASSEY VANILLAS

each polyol has its own unique characteristics like solubility, melt point, cooling effects and digestive tolerances.

The main limitation of polyols is that they are low digestible carbohydrates (LDCs) and not digested in the upper gastrointestinal tract. Therefore, at certain levels, osmotic imbalances and/or fermentation by bacteria can cause loose stools and gas. However, it is important to note that not all polyols are the same in this regard. Typically, the smaller the molecular weight of the LDC (in combination with reduced digestibility), the greater its osmotic effects on the lower GI tract.

One thing to remember is that polyols (like other sweeteners) are meant to be tools, not crutches, used to help individuals trying to maintain a healthier lifestyle. Therefore, when used within sensible guidelines, polyols and other sweeteners can be used to create high-quality products that not only taste good, but that are good for you, too. Pf

Website Resources:

www.briess.com — Information on natural and organic sweeteners

www.danisco.com — Searchable site with brief information on sweeteners and bulking agents

www.spipolyols.com — Information on sugar alcohol properties

www.americandiabetes.org — Updates on diabetes research

www.sunopta.com/fruit/ — Information on fruits, juices and fruit ingredients, with links to information on organic ingredients and certifiers

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See Food Master-*INGREDIENTS*, p. 118-119

Prepared Meals That Please

Attendees of *Prepared Foods*' 2006 R&D Seminar gathered information on flavor trends, using mushrooms to make products more attractive, how raisins can enhance food safety and quality, and the culinary benefits of chicken broth.

Culinary Flavor Trends

People's tastes in food are changing much more quickly today. The reasons are varied and are due in part to marketing and specialty publications, as well as cooking and food shows. In addition, the adoption of flavors by major brands and quick service dining operations has an affect on consumers' tastes. According to Cara Newkirk at FONA International, new foods, flavors or ingredients pass through a four-stage program the company calls the "flavor radar." These four stages are novel, "up & coming," mainstream and everyday. Novel items are often first seen at fine dining establishments from which they are rolled into premium products available only through upscale retailers. During the "up & coming" stage, these items begin to appear at casual dining restaurants and begin to receive play in gourmet food publications. The ingredients or foods will now be seen in specialty products introduced by smaller companies and may only be available in particular regions to start. When flavors or ingredients become mainstream, they will become part of family dining or fast casual establishments and be featured in the mainstream press. With growing popularity, nationally branded products will pop up using these ingredients. From here, they become part of everyday lexicon and move into the traditional fast food menus. An example of such a product is chipotle, which was a novel ingredient in the early 1990s and has since become an everyday ingredient in a wide range of products.

There are a number of research services that allow industry personnel to track food industry trends. By examining the data collected from these sources, visibility of the materials may be determined and a "flavor radar" rating given. As an example, shiso, which also is known as perilla, is in the mint family and has flavors resembling mint or fennel. According to the "flavor radar," it has been seen only in fine dining establishments, has been included as an ingredient in less than 30 new products worldwide in the past two years and

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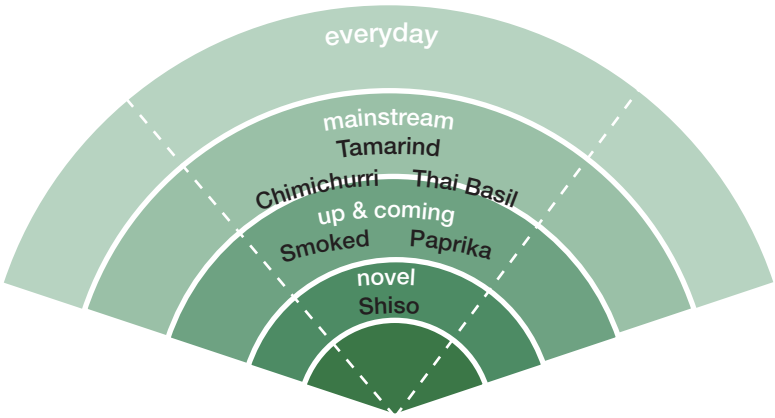
Popular Flavors



Source: FONA International Inc.'s "Flavor Radar"

According to one flavor trend tracking system, shiso is still a novel ingredient, as it is seen in only fine dining establishments and does not receive much press. In comparison, tamarind is rather popular.

has received very little coverage in the print media. Such an ingredient would still be classified as novel. On the other hand, tamarind has advanced to the mainstream. (See chart "Popular Flavors.")

This system may be used by developers or marketers as a tool to gauge public opinion and look for new product ideas using novel or "up & coming" ingredients or flavors. A walk through your local market will clearly demonstrate that there are many items marketed to mainstream consumers that a short time ago were found only in specialty stores. Any resource that helps make more educated decisions is certainly one that should not be ignored.

"Culinary Flavor Trends,"Cara Newkirk, senior market manager, savory business unit, FONA International Inc., cnewkirk@fona.com, www.fona.com.
—Summary by Rick Stier, Contributing Editor

Exotic Mushrooms

Exotic mushrooms impart unique flavors and textures to foods and they appeal to gourmets. Moreover, they enhance appearance of the foods, provide distinct nutritional benefits and are a source of the newest flavor characteristic: umami. The exotic mushrooms most popular amongst consumers are portabella, shiitake, crimini and porcini. These mushrooms may be found in grocery stores, especially upscale markets. They are featured in magazine recipes and in restaurants, and they have evolved to become part of mainstream foods.

Each of these varieties has unique characteristics and applications. For example, portabella mushrooms are related to the common white mushroom. They grow up to six inches in diameter, have a full and open cap, a meaty texture and a rich, full-bodied flavor. They are easily cultivated and economical to produce. Portabella mushrooms may be used to complement meat, fish and poultry, plus they serve as a vegetarian alternative. They also may be used with milder varieties to boost flavors, and their use in foods helps to create a very desirable visual appearance.

Exotic mushrooms may be individually quick frozen (IQF) as fresh, roasted or blanched products; air dried, packaged in brine or frozen as pasteurized purees.

Each of the IQF processing options has unique characteristics and properties. Fresh IQF mushrooms have excellent flavor, texture and appearance, plus active enzyme systems. These products are marketed as sliced, diced or whole caps. Blanching will preserve much of the desired flavors, but the mushrooms have a wider range of application use due to destruction of enzymes and reduced moisture release. Roasting exotic mushrooms will intensify flavors and reduce moisture release. (See chart "Mushroom Applications.") Reducing moisture release allows the

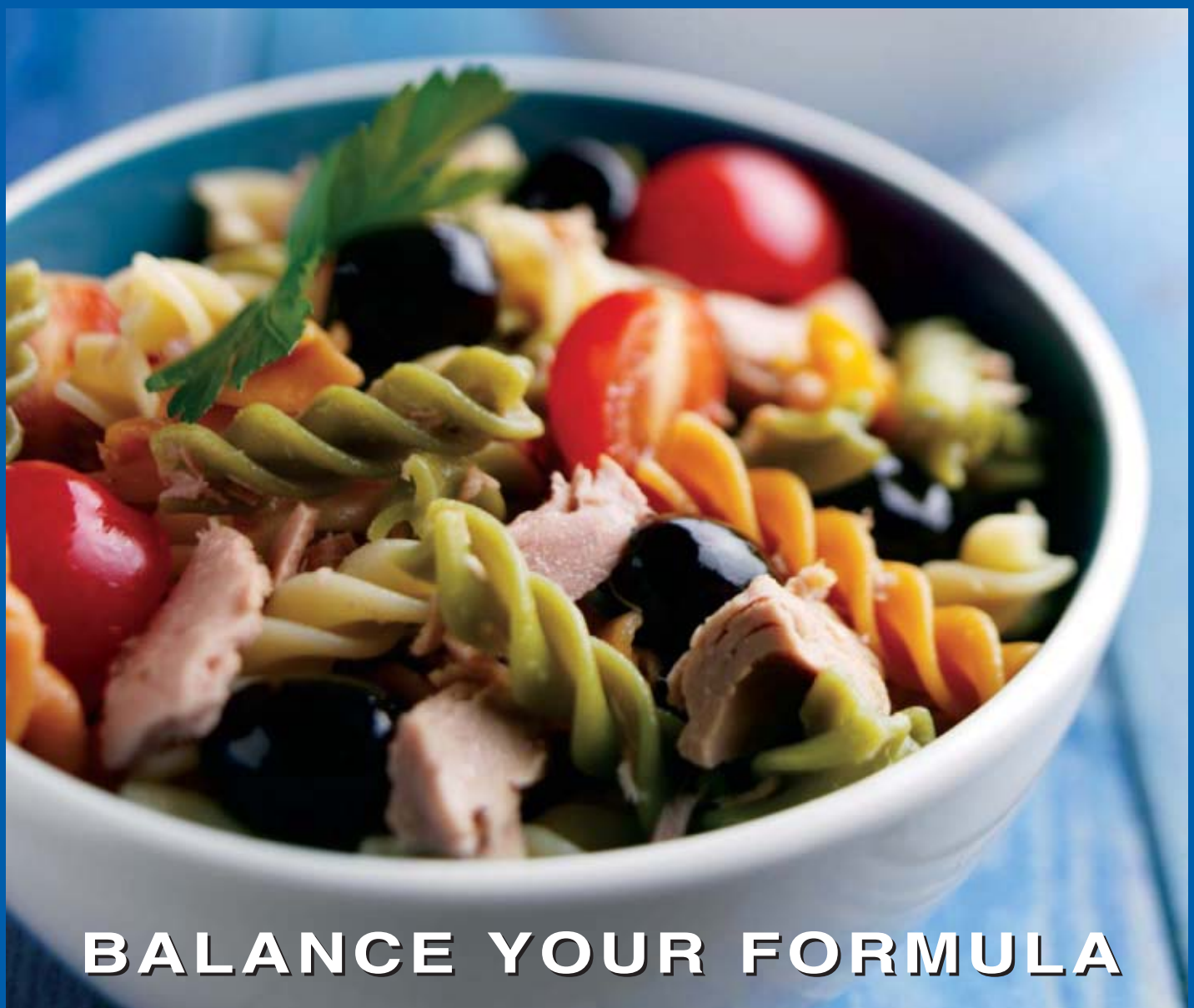
Mushroom Applications

IQF roasted best uses:
- Ready-to-eat applications
- In-house cooking processes
- Frozen pizzas
- Frozen blending

IQF blanched best uses:
- Substitute for canned product
- Ready-to-eat applications
- Frozen pizzas
- In-house cooking processes
- Frozen blending

Source: Phillips Gourmet Mushrooms

www.PreparedFoods.com/rd



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products to be used more effectively in ready-to-eat applications and on products such as pizza. The lower moisture minimizes the potential for producing soggy finished products.

Air dried mushrooms are sold as whole, sliced, kibbled or powdered. These products have excellent shelflife, intense flavors, great versatility as an ingredient and are an economical ingredient alternative. They may be used in dry packed items, in products cooked in-house or for enhancing flavor in formulated products. Brine-packed exotic mushrooms are marketed as sliced or whole. They are fully cooked and release no moisture. Brine-packed mushrooms are a substitution for canned products, have excellent applicability in refrigerated and frozen applications (especially pizzas) and may be used in ready-to-eat products. Lastly, frozen pasteurized purees are excellent ingredients for use as flavor bases. They will enhance products by contributing fresh mushroom flavors and aroma.

"Umami! Using Exotic Mushrooms for Maximum Flavor and Consumer Appeal," Rick Angelucci, Phillips Gourmet Mushrooms, ra@phillips-gourmet.com, www.phillipsmushroomfarms.com.
—Summary by Rick Stier, Contributing Editor

Raisins Offer Cleaner Labels and Enhanced Shelflife

California's Central Valley is the center of raisin growing in the U.S. The predominant variety is the Thompson seedless. Raisins are hand harvested, and the majority of the crop is sun-dried, although some are also mechanically dried. The final product is called golden raisins, which are produced by five hours' exposure to sulfur dioxide that prevents them from darkening. Other products include raisin paste, which is manufactured by grinding raisins, and raisin juice concentrate. The latter is manufactured by leaching raisins in water and concentrating to 70°Brix.

Research indicates that the incorporation of raisins and raisin products, such as paste and concentrate, into food products can have both significant health benefits and enhance product quality. Raisins are high in fiber, carbohydrates and essential minerals. (See chart "Raisin Composition.") Raisins are a significant source of inulin, a fiber-like carbohydrate that is associated with colon health. They also help support the growth of beneficial microorganisms in the intestinal tract. Studies have shown that raisins stimulate the body to replace bile acids, which will lower serum cholesterol levels and reduce the risk of heart disease.

Raisins are high in fiber, carbohydrates and essential minerals. The dried fruit is a significant source of inulin, a fiber-like carbohydrate that is associated with colon health.

The addition of raisin juice concentrate will enhance flavor intensity in sauces. Raisins have high levels of phenolic compounds, which are known to have antimicrobiological properties. Workers at Texas A & M have conducted studies that demonstrate that raisins will inhibit *L. monocytogenes* and *E. coli* 0157:H7 at ranges of 70% to 95% and 50% to 70%, respectively. Other research has shown that the addition of raisins to breads inhibits mold growth. Bread without raisins developed mold within three days, whereas products with added raisins showed no mold growth after 20 days. Raisin paste may be added to bakery products as a fat replacer and as a natural colorant. Raisin paste provides texture, sweetness and enhances mouthfeel. The products may be used in extrudable fillings and as a binding agent.

The antimicrobial activity noted above is a function of several factors, including the phenolic compounds, low pH (ranges from 2.0 to 3.5) and the presence of organic acids, such as tartaric and propionic. Incorporation of raisins, raisin paste or raisin concentrate into bakery products reduces water activity and can inhibit mold growth.

Raisins have applications in many areas that may not be considered traditional. They can be used in dairy products such as frozen novelties, ice creams and yogurt, as well as in sauces, where they can add sweetness, color and enhance flavor. They also can be used in both sweet and salty snacks. Finally, since they are a natural product, raisins provide users with a potential marketing advantage.

Raisin Composition

Component	Grams
Water	15.4
Proteins	3.3
Lipids	0.4
Total Carb.	79.1
Fiber (5.3g)	
Glucose (32g)	
Fructose (36g)	
Ash	1.8
Total	100

Source: California Raisin Marketing Board

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"Cleaner Labels to Enhanced Shelflife with Raisins," David Ropa, food industry marketing, consultant, California Raisin Marketing Board, dropa@tjpmd.com, www.raisins.org.
—Summary by Rick Stier, Contributing Editor

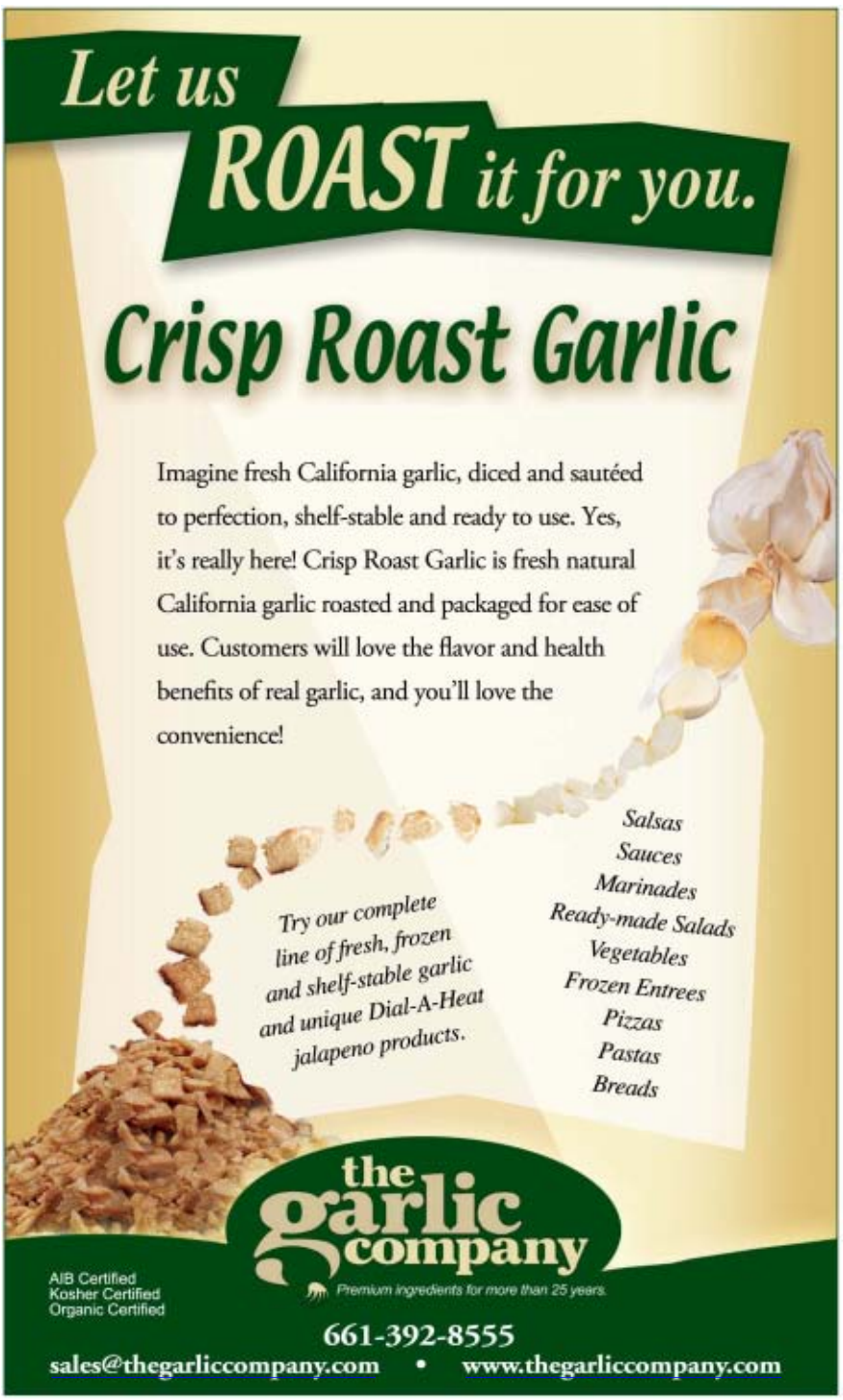
Dehydrated Chicken Broth Applications

Pure dehydrated chicken broth is a versatile and all natural ingredient. It may be used in soups, soup bases, broths, bouillons, sauces, gravies, side dishes, meals, marinades and in flavor systems. Usage levels vary with the application. Average usage levels in wet soups range from 0.5% to 2.0%, whereas levels in reacted flavors may range as high as 25%.

Chicken broth is produced by cooking whole chickens, chicken parts, chicken carcasses or chicken bones. Broilers, layers or breeders may serve as the raw material. The cooked chicken is separated into liquid and solid (meat) fractions. The liquid fraction is separated into fat and broth. The broth is then concentrated into product high in protein and essential amino acids. For example, 100g of dehydrated broth contains 88g of protein. (See chart "Chicken Broth Analysis.")

Chicken broth has a reputation that it is "good for you." There are ethnic groups (and many moms) who consider chicken soup a cure-all. Recent scientific studies have confirmed some of these "old wives' tales."

Chicken broth has a number of very desirable characteristics. It has an appealing flavor and a distinctive aroma. Its mouthfeel resembles gelatin. The color and flavor profiles vary with the preparation method. Preparation procedures allow the manufacturer to make products that vary from savory, to roasted, to somewhat bitter and blend well with the other flavors and seasonings used. The broth chosen becomes, if not the base, at least an integral part of the flavor system. In other words, the manufacturing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Chicken Broth Analysis

Protein	88g
Fat	<1g
H_2O	3-4g
Carbohydrates	0g
Calories	352
Cholesterol	16 mg
Salt (natural)	2-4g
Ash	8g

Source: International Dehydrated Foods Inc.

Chicken broth is considered by many to have curative powers. This chart shows the nutritive breakdown of 100g of dehydrated chicken broth.

process may be tweaked to produce a wide range of products that are applicable in a wide variety of finished products. The addition of salt and mirepoix will enhance the flavor of broth, but the naturally occurring umami notes allow the end-user to add very little to round out the desired profile. Dry broths are shelf-stable for up to two years. Unlike typical powdered broths, agglomerated broth powders exhibit excellent flow characteristics and readily disperse in cold water. Chicken broth has the added advantage of being a natural emulsifier.

There are a number of advantages to using dehydrated chicken broth. One truckload of dry broth equals three truckloads of frozen broth at 32% total solids (or 37° Brix). This reduces shipping costs alone by about 67%. Dehydrated chicken broth does not require refrigeration or freezing, hence there is no need to build a preconditioning step into the process, i.e., tempering, melting or standardizing. The use of dry broth controls production losses. Processors might replace a flavor with chicken broth and find it very label friendly.

"Dehydrated Chicken Broth Applications in Prepared Foods," Roger Dake, director of research and development, International Dehydrated Foods Inc., rdake@idf.com, www.idf.com.
—Summary by Rick Stier, Contributing Editor

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PREPARED FOODS NEW PRODUCTS CONFERENCE

October 14-17, 2007 • Naples Grande Resort, Naples, Florida Mintel

Prepared Foods' 25th annual **New Products Conference** is the food & beverage industry's premier event for gaining valuable insights into exciting global new products, culinary advances and emerging consumer trends.

The **New Products Conference** provides R&D, Marketing and Corporate Management executives like you, a dynamic forum to learn from 18 world-class speakers, capture valuable new product & trend data, participate in an interactive culinary session, taste new products from around the globe, experience a live consumer focus group, capitalize on incredible networking and rejuvenate your creativity.

Sunday, October 14, 2007

12:00 - 4:00 p.m. **Everglades Adventure**
Travel the woven waterways of 10,000 islands while solitude envelopes you. You may see the snout of a manatee or the grace of dolphins swimming, birds, plants, and marine life.
Sponsored by Innophos

12:30 p.m. **Golf Tournament**
The Naples Grande golf course has challenges to put you to the test, yet it remains forgiving enough to remind you that golf is, after all, supposed to be fun.
Sponsored by Chr. Hansen

1:00-5:00 p.m. **Pre-Conference Workshops**
The Product Development Management Association's pre-conference sessions offer attendees a highly customized, intimate, learning opportunity.

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1) The Case for Building Your Innovation Budget
Lip service to innovation ends where the budget begins. Successful innovation management depends on the steady long term funding that builds a continuous flow of new ideas for your market. Funding must be matched by an informed leadership team that is both aggressive around expectations and understanding of failure. This workshop will take a hard look at strategies that succeed and strategies that doom a company to low margin slow follower status. We will look at ways to help participants build their case for their innovation budget.
Christopher W. Miller, Ph.D., NPDP, PDMA

2) Developing New Product Concepts
Responsible for developing new product concepts to fill your innovation pipeline and not sure how to get started? This workshop is a step-by-step guide for building new product concepts from task identification and idea generation through initial screening.
Andre Csapo, Director Discovery & Innovation, PDMA

3) The Creative U
Knowledge of your own creative style and creative preference is important for top performance at work or in your life. Learning tools and techniques to enhance creativity and bring creative energy into the service of your customer is the topic of this fun and exciting exploratory workshop.
Bree Gillespie, Director, Discovery & Innovation, PDMA

7:00-9:00 p.m. **Welcome Reception**
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Monday, October 15, 2007

7:30-8:30 a.m. **Breakfast Buffet**
Sponsored by Tree Top

8:30-8:45 a.m. **Opening Remarks**
Peter Havens, Group Publisher and Claudia O'Donnell, Editor-in-Chief, *Prepared Foods*

8:45-9:30 a.m. **Keynote: Convenience as Defined by the Generations: Boomer, Gen Xer and Millennial**
Speaker: Larry Wu Jr., Vice President, Consumer Strategist, Food and Beverage, Iconoculture
"Convenience" conjures up images of a speedy kitchen for consumers, but mealtime stress plays out differently for each generational consumer segment. Time is not always the primary driver, and the definition of kitchen convenience varies by age. How does this "Ready, Set, Go!" behavior differ by each generation? What is the impact on food choices, and how can these differences be applied to product development, packaging and marketing strategies? Wu's experience as R&D director with Starbucks, as well as with CH Guenther & Son, General Foods Corporation and Campbell Soup, gives him real-world experience for realistic advice.

9:30-10:00 a.m. **Understanding La Comida Latina**
Speaker: Ricardo Lopez, President, Hispanic Research Inc.
Hispanic culture revolves around food. Neighborhood selections are even based on the availability of Latino foods. This unyielding attitude affects everyone in the food industry and is changing the way America eats. However, understanding Latino food is not easy. Latinos come from some 20 different countries, each with a unique food heritage. In addition, Hispanics demand new prepared foods to go with their new American lifestyle. This presentation examines Hispanic food attitudes and addresses Latino food needs.

10:00-10:30 a.m. **Refreshment Break**
Sponsored by Flax Canada 2015

10:30-11:00 a.m. **Fads and Fundamental Changes, Tracking the American Consumer**
Speaker: Joe Derochowski, Director, NPD Group
Dining out or dining in. Snacking or sit-down meals? What do Americans think and do? Utilizing research from 30 proprietary databases and 31 years of trend tracking, a revealing look explores what, where, when and how Americans eat. Year-to-year changes in eating habits can be small but surprising, while significant changes emerge over time.

11:00-12:00 noon **Exploring Tumultuous Teens**
Facilitators: Bryan Urbick, CEO & Chairman, and Abel Westerhof, COO & Director – Consumer Knowledge Centre Ltd
Targeting the critical teen market is a challenge for food manufacturers. Many companies are resigned to lose consumers during these years in the hope that teens will again be brand loyal during adulthood. Mintel has called teens the "ignored demographic." Learn from a live teen panel discussing food and beverages in the context of their lives, what is important to them and what is not. Hear their views on shopping for food, eating in versus out, choosing brands and products, product winners and losers, and, most importantly, their reasons why. Audience participation is encouraged in an extended Q&A session.
Sponsored by IFF

12:00-1:00 p.m. **Luncheon**
Sponsored by California Raisin Board

1:15-1:50 p.m. **Obesity: A Defining Issue in Health and Wellness**
Speaker: Barb Stuckey, Executive VP of Marketing, Mattson
New products ideally address all consumer desires, from indulgence to healthy eating. With the current "obesity crisis," how can this be accomplished ethically, yet profitably? What marketing and product development tactics assist food manufacturers in finding overlooked opportunities? Primary research is unveiled providing insights on new concepts offering consumers hope, encouragement and help in weight and overall health management.

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OCTOBER 14-17, 2007 Naples Grand Resort, Naples, Florida

1:50-2:30 p.m. To be announced.

2:30-3:00 p.m. Refreshment Break
Sponsored by Flax Canada 2015

3:00-3:40 p.m. Delving into Demographics
Speakers: Lynn Dornblaser and David Jago, Directors, GNPD Consulting Services
Consumers want what they want, but what do food manufacturers think they want? This fast-paced presentation discusses new products around the globe that are being positioned for specific demographics. What intriguing new products are for children, for women, for consumers concerned about heart health or digestive health, for those looking for familiar indulgence or searching for novel, creative new foods and beverages? Insights and information will light the creative spark in R&D and marketers alike.

3:40-5:30 p.m. Global Product Sampling: Delivering to Consumer Niches
Presented by: The consulting staff of the Mintel Global New Products Database (GNPD)
Sometimes listening is not enough. Tasting, touching and seeing firsthand some 70 new products launched around the world provides invaluable, impossible-to-get information. Products will be grouped by key consumer niches.

6:00-7:00 p.m. Cocktail Reception
Sponsored by Hormel Foods Corp.

7:00-7:30 p.m. The Spirit of Innovation Awards Ceremony
Join us in celebrating the industry-nominated, innovative product development teams that recently introduced a new product in foodservice and retail markets. Discover how these product development teams operate.
Sponsored by Ventura Foods

7:30-9:00 p.m. Spirit of Innovation Dinner
Join us for a casual buffet featuring Floridian cuisine. Relax and enjoy great food and conversation. Share your thoughts on today's sessions. Immediately following the Awards Ceremony.
Sponsored by Ventura Foods

"Excellent speakers, very interesting presentations"

"Better understanding of worldwide trends in foods and flavors"

Tuesday, October 16, 2007

7:30-8:30 a.m. Breakfast Buffet
Sponsored by Ocean Nutrition Canada

8:30-9:15 a.m. Positioning "Healthy" Products for Success
Speaker: Valerie Skala Walker, Vice President, Consumer & Shopper Insights, Information Resources, Inc.
As more prepared food products incorporate health-related benefits, it is increasingly important to understand the factors that help or hinder their success. What are some of the most successful new brands with health-related positions in the marketplace, and what are the factors contributing to that success? From the words used to describe a product's features and benefits to the dollars spent on advertising, what makes one brand outsell its rivals?

9:15-10:00 a.m. Exploring Tumultuous Teens: Insights and Take Aways
Speaker: Bryan Urbick, CEO & Chairman, Consumer Knowledge Centre Ltd
As a follow-up to Monday's thought-provoking panel of teens, additional insight and analysis will provide the audience a better understanding of this important and mystifying consumer segment.
Sponsored by IFF

10:00-10:30 a.m. Refreshment Break
Sponsored by Qualisoy

10:30-11:00 a.m. To be announced.

11:00-11:35 a.m. If it Tastes Good, is it Bad?
Speaker: Dr. Gary Beauchamp, Director, Monell Chemical Senses Center
Foods or beverages will not be consumed unless they taste good. Yet it sometimes seems as if most of what tastes good is actually bad for us--especially sugar, salt and fat. Also, what is good for us often is not so well liked, such as vegetables. These generalizations are particularly pertinent when considering children. This presentation discusses why we like and dislike what we do, how these preferences might be modified, and why recent discoveries in how our flavor sensory systems work may provide new approaches to healthy enhancement of food flavors.

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11:35-12:00 noon **Collegiate Education Awards**

12:00-1:00 p.m. **Luncheon**
Sponsored by Givaudan

1:15-3:45 p.m. **Innovation Panel**
Innovation has been defined as the successful implementation of creative ideas within an organization. Through innovation, companies lift their products above commodity status to provide more profitable foods and beverages desired by consumers. What does it mean to be innovative? What are pitfalls to avoid? Which tools and opportunities can be leveraged? This accomplished panel will offer perceptive suggestions.

1:15-1:45 p.m. **Panelist 1: Lynn Gordon, President, French Meadow Bakery & Cafe**
French Meadow Bakery has nationally introduced cutting-edge, healthful and even controversial products such as Men's Bread, Healthy Hemp Bagels and Fat Flush Sprouted Tortillas. Founded in 1985, French Meadow is the longest continuously certified organic bakery in the country and has been twice named by *Bon Appetit* magazine as one of the Ten Best bread bakeries in the U.S. With an unorthodox approach, business success has followed, with Gordon being named Minnesota's Small Business Person of the Year in 2005 by the Minnesota district office of the U.S. Small Business Administration.

1:45-2:15 p.m. **Panelist 2: To be announced.**

2:15-2:45 p.m. **Refreshment Break**
Sponsored by Wild Flavors

2:45-3:15 p.m. **Panelist 3: To be announced.**

3:15-3:45 p.m. **Panel Q&A Session**

6:00-7:30 p.m. **Networking Reception**
Relax, unwind and enjoy mouth watering appetizers and thirst-quenching libations.
Sponsored by National Starch Food Innovation

7:30 p.m. **Dinner on your own.**

"Focus on trends and emerging opportunities"

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Wednesday, October 17, 2007

7:30-8:30 a.m. **Breakfast Buffet**
Sponsored by Mane, Inc.

8:30-10:00 a.m. **Differentiating Products with Innovative Flavor Combinations**
Speakers and Facilitators: Dr. Victor A.L. Gielisse, CMC, Associate Vice President, and Ronald De Santis, Director, Continuing Education's Industry Solution Group, The Culinary Institute of America
Interactive Tasting Session
Consumers demand variety, stimulation, authenticity and satisfaction from foods and beverages. This interactive session will demonstrate the use of ordinary ingredients to bring extraordinary results by creating flavors that entice consumers. Two great culinary educators exhibit their skills and enlighten New Product Conference attendees by providing irreplaceable knowledge through the experience of tasteful samples.

10:00-10:40 a.m. **Food and Flavor Trends Through Foodservice Operators' Eyes**
Speaker: Kevin Higar, Director Operator Product Development, Technomic
NEW
The foodservice industry is both a vital customer segment of packaged foods companies and also a source of inspiration for new product ideas. What are current and emerging food developments in this arena? What culinary trends, flavor profiles and emerging concepts are operators utilizing to satisfy loyal customers and attract new ones? What strategic consumer trends drive the menu items of today and tomorrow? Most importantly, how do prepared food suppliers help operators succeed in this dynamic environment?

10:40-11:00 a.m. **Closing: Thank you from New Products Conference Organizers**
Grand prize drawing and Mintel Global New Products giveaway.

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Healthy Bread Flavors

Kerry Hughes, R&D Applications Editor

According to Packaged Facts, a division of MarketResearch.com, virtually every top marketer introduced health-conscious bread in 2005. Although the majority of new product development focused on whole grains, healthful and artisan breads, new blended flavors are now popular with consumers.

Puratos has developed Sapore, a line of natural biofermented flavors that capitalizes on this trend. Sapore provides bakery and snack manufacturers with the ability to differentiate their whole grain and artisan product offerings without sacrificing manufacturing convenience. The Sapore line of all-natural flavors helps food developers create recipes that stand out from their competition with their unique flavor profiles. The clean label flavor solutions have no chemical additives and can be listed on labels as "natural flavor." Moreover, the line offers convenience, because the ingredients are available in ready-to-use liquid and powder forms easily added to any baking process. This enables the processor to spend minutes rather than hours to achieve a superior bakery product with a unique and delicious flavor.

According to Don Montuori, publisher of Packaged Facts, "Now that low-carb is out, good carbs are hot, and 'functional' breads with added nutritional benefits are becoming hot sellers. Messaging, such as 'no trans fat,' 'organic' and 'whole grain,' as well as the introduction of high-end artisan breads and blended flavors, are hitting home runs with consumers looking to feed their carb cravings with fare that is more upscale and nutritionally sound than everyday white bread."

The Puratos Sapore line claims to be able to produce delicious signature bread, whether it is an original recipe for crunchy pretzels, a pizza crust or an artisan bread. The ingredient range includes sourdough, sponge and dough, rye and wheat flavors. They have starter cultures and yeast extracts, active and non-active flavors. They also have mild, strong and sour flavors.

With 150 applied researchers and 250 field technicians, Puratos will use its sensory panel capabilities and its R&D center to develop foods and flavors. Customers include bakers, foodservice institutions, fast food restaurants and other users of fresh or frozen dough, whether they are big or small. Pf

Ingredients in a line of natural biofermented flavors help manufacturers differentiate their product line in an economical manner.

For more information:
Puratos Corporation USA, Christophe Dewilde • 856-428-4300, ext. 2014
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Applied Ingredients

Ingredient	Base	Form	Flavor Profile	Dosage	Applications
Tosca	Wheat	Powder	Strong wheat	3-4%	Italian style breads, ciabatta, pizzas, crusty rolls
Rigoletto	Wheat	Powder	Yeast	3%	Hamburger buns, hot dog rolls, frozen doughs; gives yeast flavor to toast
Traviata	Rye	Powder	Mild sourdough	2-3%	French baguettes, Spanish breads, crusty rolls, country breads, pizzas
Othello	Rye	Powder	Strong rye	1-3% 4-5% (rye)	Rye breads, multi-grain breads, whole meal breads, old fashioned baguettes/breads (yellow crumb)
Norma	Wheat	Powder	Mild wheat	3-4%	Italian style breads, ciabatta, French baguettes, Spanish breads, croissants, crusty rolls
Fidelio	Wheat	Liquid	Mild wheat	3% 10-12% (San Francisco style)	San Francisco sourdough bread, wheat breads
Aroldo	Rye	Liquid	Strong rye	7-8% (rye) 2%	Mixed rye bread, mixed wheat bread
Aida	Rye	Liquid	Mild rye	10% (rye) 2-3%	Multigrain, country-style
Panarome	Wheat	Liquid	Strong yeast	2-3%	Hamburger buns, hot dog rolls, frozen doughs; gives yeast flavor to toast and can also be used as a spray in bread packaging

Source: Puratos Corporation USA

Body-building Pizza?

Kerry Hughes, R&D Applications Editor

PHOTO COURTESY OF ©ISTOCKPHOTO.COM

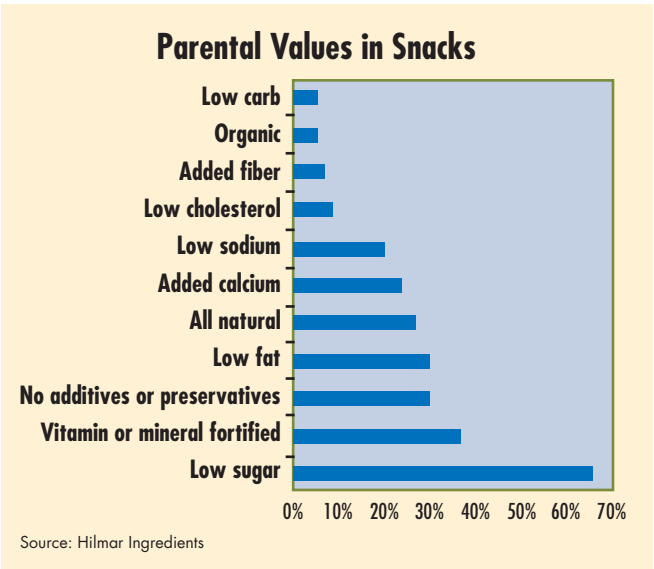
Imagine your child standing in line for his/her school lunch. Today your child decides to make a healthy choice—pizza! Functional foods are appearing in all avenues of convenient eating, and a school lunch pizza fortified with whey protein is just one example. As a source of complete protein and amino acids, whey protein can help build muscles in growing bodies. Additionally, as a functional protein, whey can be used to replace fat in a variety of foods. If whey protein can do pizza well enough to satisfy a child's taste, imagine what it can do for lasagna, ravioli or a calzone.

One of the leaders in whey protein and its use in functional foods, Hilmar Ingredients, offers Hilmar™ 8610 Whey Protein Concentrate for use in dough and Hilmar 8200 Whey Protein Concentrate for reduced-meat and -sausage applications. In addition to functional contributions, Hilmar Ingredients' whey proteins deliver enhanced nutrition with a protein efficiency ratio (PER) of 3.2 and protein digestibility corrected amino acid score (PDCAAS) of 1.00.

Hilmar 8610 also helps improve the product qualities in applications such as pasta, protein bars, baked goods, meat and surimi. It can assist with texture modification, flour replacement in low-carb products and egg replacement. It has high heat stability and possesses strong gelling characteristics.

Hilmar 8200 excels at water-binding and gelling, making it suitable for meat applications. As an alternative to meat and soy ingredients, it improves a food's cook yield, texture, flavor and juiciness. With a low GI and minimal carbohydrate level, it is an advantage in weight management foods. Its acid and heat stability are key in beverages.

> Parents want snacks that are low in sugar and fat and/or that have no additives/preservatives. They are also interested in treats that are fortified with vitamins and minerals.



Source: Hilmar Ingredients

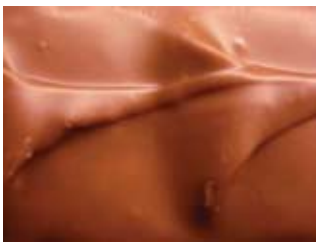
According to data from the Centers for Disease Control, 17% of Americans were overweight in 2003-2004—triple what it was in 1980. Consumers, companies and political organizations are working to find ways to solve the issue.

New legislation is one tactic. For example, California Senate Bills 12 and 19, which set standards for at-school food and drink, say that a snack serving can have no more than:

- 35% of calories from fat.
- 10% of calories from saturated fat.
- 35% sugar by weight.
- 175 calories in elementary schools.
- 250 calories in middle and high schools.

In fact, most states have passed both school nutrition legislation and physical education legislation. Parents and health-minded consumers also are looking to the food industry to help provide solutions. (See chart "Parental Values in Snacks.") Hilmar Ingredients understands children's nutrition and commercial food science. It offers product developments using whey protein that meet the needs of food formulators and satisfies parents' quest for good nutrition for their children. pf

For more information:
Hilmar Ingredients, Hilmar, Calif.
Gwen Bargetzi • 209-656-2582 • gbargetzi@hilmaringredients.com
www.hilmaringredients.com



A Chocoholic's Dream

A new product answers connoisseurs' demands for a richer, thicker drinking chocolate. Peter's™ Burgundy® Semi-sweet Chocolate is now available in finely ground form, eliminating the need for grinding blocks or wafers. This new product from Cargill is pure chocolate, not a cocoa powder and sugar blend. Chocolatiers can make drinking chocolate with fruity, winey undertones, create their own signature-flavored drinks by adding spices or simply repackage the product and sell it to their customers. Peter's Finely Ground Burgundy® Semi-sweet Chocolate is a versatile product that can be used as a seeding agent for tempering chocolate or as a delicious garnish for desserts such as cakes, tortes and mousses. Cargill Cocoa and Chocolate, Lori Fligge, 952-742-2275, lori_fligge@cargill.com, www.cargill.com

It's Easy to Increase Iron

A proprietary blend of GRAS-approved ingredients that have been temperature-dried forms a versatile water-soluble iron compound with flexible organoleptic properties. Tasty Iron™, from Global Calcium through its exclusive U.S. agent, American International Chemical Inc. (AIC), is a new source of bioavailable iron to the U.S. market. American International Chemical Inc., 800-238-0001, www.aicma.com

Naturally Sweet

As the natural foods market grows, consumers continue to look for alternatives, specifically when it comes to highly refined sugars. In response to this demand, Mastertaste's Natural Products Division has developed a line of natural sweetener powders using its proprietary vacuum freeze-drying technology. Honey, maple syrup and molasses are natural sweeteners that deliver the same sweet flavor as sugar—with the benefit of delivering essential vitamins and minerals. Mastertaste, Nancy Lawrence, 201-708-9264, nancy.lawrence@mastertaste.com

Clean-label Starches

A new flyer on starches explains how "clean label" functional native starches can expand food manufacturers' options by providing exceptional freeze/thaw and shelflife stability in wholesome, natural convenience foods. According to *NOVATION Prima Functional Native Starches*, from National Starch, consumers are concerned about additives and are influenced by product claims, health benefits and ingredient statements. NOVATION starches are made with a revolutionary, patented technology that enables food manufacturers to produce high-quality, stable and convenient foods with "natural" or "organic" claims. National Starch Food Innovation, David Manion, 908-685-5395, dave.manion@nstarch.com, www.foodinnovation.com

Website Seeks Innovative Food Scientists

InnoCentive is the first online forum that allows world class scientists (Solvers) and R&D-based companies to collaborate in "open innovation." The company offers monetary incentives to scientific challenges that include foodservice technology and R&D ideas that can be developed into viable products or methods.

The use of prizes to spur innovation has benefits for all involved. Started six years ago by drug maker Eli Lilly, InnoCentive now has Seeker clients that span the food industry, consumer products, agro sciences and specialty and diversified chemicals industry sectors. InnoCentive charges clients, or "Seekers," to broadcast scientific problems on its website, where scientists, or "Solvers," are offered cash to find solutions. Interestingly, both Seekers and Solvers remain anonymous. This is an advantage, because the winning solution is based on the science rather than on the name or background of the scientist.

Dr. Jill Ann Panetta, chief scientific officer for InnoCentive, has a strong belief in the company's goals. In her view, InnoCentive is "connecting companies looking for answers with scientists who have already asked the questions." Included among the challenges on the group's website are many that would interest food scientists. For example, InnoCentive Challenge 4494931 posts the task of "reducing fat in fried vegetable." With a prize of $20,000 to the food scientist who can find a method for the preparation of reduced-fat fried vegetables, the incentive is both monetary and of interest to anyone in the food science/nutrition fields. Another InnoCentive Challenge seeks methods to mask flavors. Still other challenges involve questions like developing pressure-sensitive adhesive for re-sealing bags or improving adhesion of powders to food substances. While some require practical technology, others require only a written proposal. Visit the website for more information and to view current challenges. InnoCentive, www.innocentive.com

—Barbara T. Nessinger, Contributing Editor

Real Knowledge from *Real* People

IFT's Pre-Annual Meeting Short Courses

Where do the top minds in food science and technology go for in-depth professional development? To IFT's Short Courses, of course! They're the number-one way to extend the educational value of IFT's Annual Meeting & Food Expo, July 28 – August 1, in Chicago.

For more information or to register, go to **ift.org/amfe.**

One-Day Courses: July 28
- Introduction to Nanobiotechnology
- New Generation Oils

Two-Day Courses: July 27-28
- Flavor Interactions in Foods
- Food Packaging for the Non-Packaging Professional
- Food Science for the Non-Food Scientist
- From Concept to Commercialization: Blending Culinary Arts and Food Science
- Ingredient Applications for Total Health & Wellness
- Nonthermal Processing Technologies
- Preparing for Third-Party Audits

ift.org/amfe

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Institute of Food Technologists
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Widely Functional Fibers

Natural oat fibers and hydrocolloids provide a wide range of functionality and improved performance within bakery, ready-to-eat cereals, meal replacement bars, snack foods and even ground meats or sausages. Grain Millers offers fiber ingredients that feature high lipid- and water-binding, improved texture and higher phytochemical properties than any other fiber on the market today. For fiber, Grain Millers is the natural choice. Grain Millers, Darren Schubert, 800-443-8972, ext. 6460

Nurturing Bacteria

Harvested by native American peoples and used as a food source by the Lewis and Clark expedition, Wild Sunflower Root is a rich, low-calorie and low-glycemic source of prebiotic fructo-oligosaccharides (FOS) and inulin. Vita-Pakt® Citrus Products Co. has introduced organic Wild Sunflower Root flour, a whole-food ingredient that nurtures the healthy bacteria in the digestive tract. It also contains significant levels of protein and arginine, an amino acid associated with natural body tissue repair and immune health. It can be used in breads, nutrition bars, cereals and other foods and labeled as either "Wild Sunflower Root" or as "Jerusalem Artichoke" in the ingredient legend. Vita-Pakt Citrus Products Co., 800-935-7258, sales@vita-pakt.com, www.Vita-Pakt.com

Easy Fiber

Sprinkling flaxseed onto cereals, yogurts or salads is an easy and tasty way to add fiber and nutrition to the consumer diet. FLAX-IT!™ Flaxseed Nuggets from ENRECO Inc. provide a convenient, tasty and attractive way to add the health benefits of milled, whole-grain flaxseed to foods. Food product applications range from baked goods, pancakes and nutrition bars to fruit snacks, yogurt and salad toppings, and confections. The nuggets are especially rich in omega-3 oils, antioxidants and total dietary fiber; they are gluten-free, trans fat-free and contain no known allergens. Special formulations and flavors can be customized to specific customer needs. ENRECO Inc., 800-962-9536, sales@enreco.com, www.ENRECO.com

2007 Top Ten Hot Flavors and Fragrances

Today's consumers recognize healthy alternatives, and "organic" and "natural" flavors may be a part of those choices. New fruits and flavors that are becoming popular in foods include pomegranate, originally launched in the beverage industry, but today in everything from candles to yogurts; acai berry, with its high levels of antioxidant properties; goji berry (wolfberry), another high-antioxidant fruit; lulo fruit, extremely popular in Colombia where it is used as a fruit drink; mamey fruit, with a taste that is a mix between apricot, peach, papaya and mangosteen, once recognized by Queen Victoria as the "queen of fruits." Others include blood orange, giving consumers a new take on a familiar taste; fresh ginger root, known for its distinct sharp sensation; guavasteen (*feijoa*), a high-antioxidant fruit from New Zealand; and cashew apple (*marañón*), actually the fruit from which the cashew nut grows, currently a popular high-antioxidant fruit drink in Brazil. Some of these top 10 flavors and fragrances are already having great success in current markets, and some may blossom into these markets in the next two years. Bell Flavors & Fragrances, Michael Natale, 800-323-4387, mnatale@belff.com

All About Gelatin

A comprehensive work of reference on the topic of gelatin has been published by the scientific publishers Wiley-VCH, Weinheim, Germany. The *Handbook of Gelatine* is a manual of all current and numerous potential applications of the versatile protein gelatin and is aimed principally at technologists and application specialists in science and industry. It provides detailed information on the technological and physiological properties of the multi-talented gelatin as well as on its manufacture, processing and applications. It is available commercially in a hard cover format and in English, Spanish, Dutch and Portuguese, ISBN: 978-3-527-31548-2. Wiley-VCH, +49 (0) 62 01-60 64 00, service@wiley-vch.de, www.wiley-vch.de

International Introductions Rise Sharply

2006 showed a record-breaking barrage of new products, according to the Mintel Global New Products Database (GNPD). The key areas focused on mind, body and general good health, all of which hold strong promise for health and the environment.

Foods that highlight a reduced content of fat, calories, sugar and cholesterol are sharply on the rise. Low-/no-trans fat and gluten-free are the key movers of this category—with increases of 120% and 86%, respectively. Gluten-free foods experienced strong growth in North America, Europe and Latin America.

Food and drink product launches with an ethical positioning nearly doubled last year, with labeling appearing in more diverse categories. Ethical products are defined as those that include ingredients linked to Fair Trade or sustainability. The ethical movement has spread through more countries in the past year and does not show signs of slowing in 2007.

Pomegranate was one of the strongest stars of the year, which is leading companies to look toward the next superfruit—acai, an antioxidant-rich berry with strong exotic appeal. According to Lynn Dornblaser, director of Mintel Custom Solutions, "Acai lends itself well to premium indulgence positioning, offering all of the health benefits of other superfood ingredients." Mintel, Chanda Rowan, 312-628-7946, crowan@mintel.com, www.mintel.com

—Barbara T. Nessinger, Contributing Editor

Specific Sweeteners

A new line of easy-to-use, category-centric sweetener blends is designed to satisfy the ever-growing requirements of food manufacturers to lower caloric content in finished goods while maintaining flavor profiles. Following extensive application development by Sweetener Solutions, BakeSweet™ was created to reduce sugar/sucrose levels in cakes, cookies, bakery mixes, fillings and icings. GumSweet™ is a proprietary blend designed for use in sugar-free gums. TwoSweet™, a proprietary synergistic blend, offers excellent sucrose flavor for carbonated beverages, fruit drinks and powdered beverage mixes. The Sweetener Solutions is distributed by Univar. Univar USA Inc., Karen Weber-Millstein, 425-889-3475, karen.webermillstein@univarusa.com

2006 New Product Innovations of the Year

Each year, Datamonitor's Productscan Online identifies the top innovators from around the world in various categories, including food and beverages. These eight products represent 2006's "Build a Better Mousetrap" winners from Datamonitor.

- The solution to the problem of overripe bananas arrives in the U.S. with Chiquita's Fresh & Ready Bananas in a patented FreshPak plastic sealed tray, which keeps bananas fresh for up to four days longer.
- U.S. consumers may want to try Grapple Sweet Apples, which look like apples but feature a distinctive taste of Concord grapes. Also available for grape enthusiasts are Fizzy Fruit Sparking Fresh Grapes; these refrigerated grapes are carbonated for a new flavor sensation, but they retain their vitamins and fiber content.
- Still another item on the fruit front is Tesco Square-Shaped Watermelon. Consumers in the U.K. can buy a watermelon that is grown with wooden boxes placed over the fruit, thus forming a square shape that is easier to manage.
- A new way to flavor milk without the bother of powders or liquid syrups is Sipahh Milk Flavoring Straws. As it is sipped, special Unibeads containing flavoring dissolve into the milk.
- Now U.S. bird hunters can flavor their game as it is being shot. Season Shot Shot Gun Shell Filled with Spices is "ammo with flavor." The shot consists of tightly packed seasoning bound by a fully biodegradable food product that melts and spreads into the meat when it is shot.
- Hardy's Shuttles Wine, available in the U.K. and Australia, features one single-serving plastic bottle of wine, such as Chardonnay or Shiraz, with its own acrylic wine glass. The glass seals the bottle, is tamper-proof and is opened by a twist-top action.
- Environmentalists and economists will both love the Better Water Drinking Water Filter with Corn-based Bottle. The 16.5oz water bottle is made of corn and has its own built-in filter which removes chlorine and allows consumers to use tap water. It is also refillable (up to 90 times) and 100% renewable.

These new products combine the best of food science and research with true creativity and innovation.

Datamonitor, London, Anne Bourgeouis, abourgeois@datamonitor.com, www.productscan.com

—Barbara T. Nessinger, Contributing Editor

advertorial

2007 SSE Show Supplier Profiles

American Egg Board

Eggs' ability to foam, leaven, bind, thicken, coat, color, emulsify, control crystallization and moisture make many food formulas possible. In fact, eggs have functional properties that do the job of many additives – naturally, and with a clean label. This appeals to today's better-educated consumers who avoid additives as they seek more natural food alternatives.

Custom blended egg products that include carbohydrates, gum, starches, sugar and salt are available to meet manufacturers' specifications and to improve functional performance. To simplify your search for an egg product supplier that will meet your needs, visit the Egg Products section of AEB's Web site to learn about the many varieties of dried, refrigerated and frozen egg products and cross-reference the products to processors and distributors.

Have any questions or want additional information about the more than twenty functions of eggs, visit http://www.aeb.org/EggProducts/ or call toll-free 1-877-488-6143.

For more information, contact:
American Egg Board
1460 Renaissance Drive
Park Ridge, IL 60068
Phone: (877) 488-6143
Fax: (847) 296-7007
www.aeb.org
Booth Number: 2226

Bioenergy Life Science, Inc.

Absolute Energy
Bioenergy Life Science is the world leader in D-ribose. The Company offers branded, value-added bioactive ingredients for functional foods, beverages, nutraceuticals and cosmoceuticals. Bioenergy RIBOSE™ addresses needs affecting millions worldwide, including congestive heart failure, ischemic heart disease, neuromuscular disease, fatigue, anti-aging, sports nutrition, and energy health.

Years of research conducted at leading academic centers in the U.S. and Europe have demonstrated that D-ribose provides metabolic support to the body during and following hypoxic stress or in cases of metabolic dysfunction. D-Ribose amplifies the body's natural response to metabolic stress and acts to increase the hypoxic threshold of tissue, protecting it from oxygen deprivation and stimulating recovery following hypoxia or in cases of dysfunctional energy metabolism. D-Ribose is all natural, safe, and clinically proven.

Technology, Patents, New Products:
- 29 issued or pending patents covering broad applications for D-ribose in medicine, nutrition, and veterinary care.
- Does not raise blood sugar level.
- Safe, effective and all natural.

Major Applications:
- Functional foods, beverages, sports nutrition, anti-aging products, supplements, dairy beverages, nutrition/health/meal replacement bars, clinical nutrition, and more.

Major Products:
- Bioenergy RIBOSE™ branded D-ribose ingredient for functional food and beverage.
- Riboxyl™ branded D-ribose ingredient for cosmetics.

For more information, contact:
Bioenergy Life Science, Inc.
13840 Johnson Street NE
Ham Lake, MN 55304
Phone: 763-757-0032
Toll Free: 1-866-RIBOSE
Fax: 763-757-0588
www.bioenergy.com

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Blendex Custom Blending

The company's primary business is to blend dry ingredients for the food industry. One of the fastest growing custom blenders, Blendex has a product line of more than 200 food products produced using only the highest quality of raw materials.

Blendex is firmly committed to TQM and has been rated Superior by AIB for more than a decade. The company's operation is HACCP accredited, is the recipient of many awards including Vendor of the Year, BBB marketplace ethics, fastest growing, and several awards for Manufacturing Excellence.

All products are packaged to customers' specifications, with or without private labeling, shipped when and where they are needed – custom formulation, packaging, storage, and shipping. Blendex features blending procedures for allergenic and nutraceutical products in a climate controlled, dust controlled atmosphere. Blending at its best!

For more information, contact:
Blendex Custom Blending
11208 Electron Drive
Louisville, KY 40299
www.blendex.com
1.800.BLENDEX Toll
1.800.267.1024 Fax
Contact: Ron Carr

Blendex® Company
Blending at its best!

California Raisin Marketing Board

CALIFORNIA RAISINS –The surest path to success begins not with the product, but with what's in it.

California Raisins are always the wise choice. On their own or in some of the industry's favorite food products, California Raisins deliver unique flavor, dietary fiber, essential nutrients and important antioxidants — all self-contained in a deliciously, sun-sweetened fruit ingredient.

Whether used to enhance flavors, eliminate or reduce fat content, or simply to extend shelf-life, California Raisins are the ingredient that is always the wise choice. Why? Because not only do California Raisins transform the character of certain foods, they also maintain structural integrity during processing. California Raisins have a great emulsifying quality when added to vinaigrettes, not to mention, acting as an excellent base ingredient to naturally help bind dry ingredients together.

Like in his Sea Scallops with Salsas Pasitas Verdes (Green Salsa with Raisins) featured here, Chef Robert Del Grande deploys California Raisins in novel combinations with salty, crunchy, spicy and smoky ingredients to achieve a spectrum of subtle and balanced flavors.

Regardless of how they are used, raisins provide healthy, sun-sweetened flavor from California's San Joaquin Valley and are always a wise choice in product research and development.

Flavor Meets Functionality: the Way of the California Raisin

For more information, contact:
California Raisin Marketing Board
Karla Stockli
Vice President of Marketing
3445 North First Street, Suite 101
Fresno, CA 93726
559-248-0287 - phone
559-224-7016 - fax
www.LoveYourRaisins.com

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2007 SSE Show Supplier Profiles

Cargill Texturizing Solutions

Cargill Texturizing Solutions is one of the world's leading suppliers of texturizers and emulsifiers to the global food and beverage industry, as well as the pharmaceutical and cosmetics markets. Cargill Texturizing Solutions offers specific solutions for providing texture in multiple food applications, based on a wide palette of ingredients, including:

- Hydrocolloids
- Emulsifiers
- Lecithins
- Cultures
- Starches
- Soy flour
- Functional systems

From design through development to manufacturing, Cargill Texturizing Solutions is committed to creating with its customers innovative new products for consumers to enjoy. With a presence on five continents, a network of local affiliates, sales offices, technical laboratories and Applications Centers ensures close proximity to customers.

For more information, contact:
Cargill Texturizing Solutions
15407 McGinty Rd W
Wayzata, MN 55391
877-650-7080
www.cargilltexturizing.com

Cargill is an international provider of food, agricultural and risk management products and services. With 149,000 employees in 63 countries, the company is committed to using its knowledge and experience to collaborate with customers to help them succeed.

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Newtrition™gives your products a healthy competitive edge.

Newtrition from Cognis® Nutrition & Health is your opportunity to meet the increasing demands for innovative, effective and safe functional foods. Cognis offers naturally-sourced ingredients that can help you create cutting-edge products, and position your business for long-term growth.

Vegapure® plant sterols. The natural ingredient for heart health.

- Clinically proven to lower cholesterol up to 15%
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TONALIN® CLA (conjugated linoleic acid). The fat fighter for leaner, healthier bodies.

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- 13 major published studies prove that TONALIN® CLA works
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- The leading brand of CLA

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- Yields first-rate stability
- Exceeds market safety requirements and was first to be FDA GRAS approved
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Give your products a healthy competitive edge with **New**trition. Only from Cognis.

For more information, contact:
Cognis Nutrition & Health
Scott Backman
708-579-6188

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Edlong Dairy Flavors

Today's emphasis on "good for you" foods is going full speed and gone are the days when healthy food was expected to have less taste. Food manufacturers are now more challenged than ever as consumers expect them maintain the highest level of flavor and texture when a product is fortified with any number of vitamins, minerals and other nutrients.

Edlong Dairy Flavors, with over 90 years of experience in developing a full line of distinctive functional profiles, can enhance the flavor of your product, mask the off-notes, add mouthfeel to low or no-fat foods and many times extend your shelf-life while affording significant cost savings.

Edlong's flavors will overcome the bitter tastes of the active ingredients in many functional foods and replace that bitterness with a variety of notes and highlights that are pleasing to the palate.

Natural, Non-Dairy, Kosher Certified, Non-GMO, Organic Suitable and many other requirements can be met with Edlong's flavors. Soy-based foods and beverages, antioxidant enhanced, vegan foods, nutraceuticals… all can benefit by contacting the skilled team of flavorists and technical solution scientists who are ready to make your next healthy project a success.

Edlong, the concentrated dairy flavor experts, have six focused categories of flavors: cheese, butter, milk & cream, cultured, sweet dairy and functional.

For more information, contact:
Technical Solutions Helpdesk
Edlong Dairy Flavors
225 Scott Street
Elk Grove Village, IL 60007, U.S.A.
847-631-6700
info@edlong.com
www.edlong.com

EDLONG®
Where Service is a Lifestyle
LEGENDAIRY FLAVORS SINCE 1914

Gilroy Foods

Gilroy Foods™ is a leading supplier of vegetables, garlic, onion and capsicums to food manufacturing and foodservice companies. With a focus on innovation, Gilroy Foods offers vegetable ingredients that perform well in application and boost the vegetable profile in new products.

Controlled Moisture™ Vegetables offer unique eye appeal, including intense color and textural diversity, as well as harvest-fresh flavor. They are ready-to-use, frozen vegetables with up to 50% less water content than traditional IQF, which results in less weeping during production, and more pound-for-pound nutrition versus IQF and fresh.

The newest **GardenFrost® Softfrozen™ Purées**—a trio of on-trend, ethnic vegetable and herb blends in Asian, Latin and Mediterranean flavor profiles—add distinctive regional character to new products. The quick-thawing (thaws four times faster than traditional frozen purees), proprietary *Softfrozen*™ technology locks in garden-fresh flavor and jewel-toned vibrancy.

Gilroy Foods also offers a comprehensive array of authentic chiles in a multitude of forms—from Controlled Moisture Vegetables and GardenFrost Purées to seasoning blends and flavors. From popular chiles like chipotle and jalapeño to hard-to-source peppers like cascabel and guajillo, Gilroy Foods transforms a global garden of chiles into functional, practical ingredients to meet your needs for flavor, color or heat.

For more information, contact:
Gilroy Foods
Phone number: 800-921-7502
Web address: www.GilroyFoods.com

Gilroy Foods™

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2007 SSE Show Supplier Profiles

Gold Coast Ingredients

Gold Coast Ingredients is a high quality manufacturer of flavors, custom color blends and specialized ingredients serving the food, nutrition, functional food and nutriceutical industries. We offer custom designed masking agents and flavoring systems for all forms of products. We provide preliminary application testing, custom flavor formulations with quick turn-arounds and offer customer directed formulation parameters i.e. non-GMO, organic, spray-dried, preservative-free, etc.

As an independent producer, Gold Coast Ingredients also offers our clients low minimums, short lead times and floor stocked inventories to help facilitate your manufacturing process. Our plant in Los Angeles, California is Kosher Certified, Organic Certified and AIB Superior rated.

Gold Coast Ingredients is big enough to handle any client's needs but small enough to still care.

For more information, contact:
GOLD COAST INGREDIENTS, INC.
2429 Yates Avenue
Commerce, CA 90040
800-352-8673
323-742-8935
Fax: 323-724-9354
Email: info@goldcoastinc.com
Contact name: Michele Trent
Corporate Sales Manager
James Sgro
President
Website: www.goldcoastinc.com

GTC Nutrition

GTC Nutrition
GTC Nutrition, a business unit of Corn Products International, Inc. is a recognized leader in providing customized nutrition solutions to the food, beverage and supplement industries. Our portfolio of innovative ingredient solutions along with our in-house scientific, marketing and technical expertise brings healthy ideas and products to life – all to improve the wellbeing of today's consumers across the globe.

Core Competencies:
Ingredient Solutions
Scientific Expertise
Marketing Ingenuity
Applications Innovation
QA and Regulatory Support
Personal Customer Service

For more information, contact:
GTC Nutrition
600 Corporate Circle, Suite H
Golden, CO 80401
Phone: 800-522-4682
E-mail: generalinfo@gtcnutrition.com
www.gtcnutrition.com

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Hilmar Ingredients

Hilmar Ingredients delivers the promise of dairy – whey protein, the nutritional and functional powerhouse. As part of Hilmar Cheese Company, the world's largest single site cheese and whey products manufacturer, we have the critical advantage of a premium sweet whey supply. Steady, high quality, and carefully controlled via a select dairy producer network, our whey source is the freshest and most consistent possible.

From this foundation, we produce the Hilmar™ 8000 series of whey proteins – from 80% WPC to hydrolysates and +90% isolates, including instantized versions. Our WPI is uniquely functional due to its special manufacturing via cross flow-filtration and a patented fractionation process. We also offer an alpha-lac enriched whey protein for applications requiring specialized nutrition.

In addition, we produce the Hilmar™ 5000 series of high purity edible and refined lactose, and pharmaceutical lactose specifically formulated for the wet granulation process.

Hilmar Ingredients also provides technical, processing and formulation assistance. We have a fully equipped pilot kitchen and research lab staffed by experienced protein and application scientists – all designed to help you discover the advantage of dairy in your food or beverage.

Key Applications

- Low GI foods
- Acid beverages
- Snack bars
- Powdered mixes
- Fortified waters, fruit juice
- Egg replacement
- Dips, dressings
- Healthy baked goods
- Frozen meals

As shown at SupplySide East, foods can have healthier GI values when formulated with Hilmar whey protein.

For more information, contact:

Hilmar Ingredients
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Main: 209-667-6076
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Fax: 209—656-1184
Email: info@hilmaringredients.com
www.hilmaringredients.com

HILMAR INGREDIENTS™
We deliver the promise of dairy.™

Innophos, Inc.

Innophos
Our new name says it all…

Innophos is the culmination of over a century of advancement in phosphate technology. Although our name may be new to you, our phosphate technologies have been providing superior quality products for use in tablet manufacture and calcium phosphorus fortification for over 100 years. Our products have provided texture, mineral fortification, enhanced color and flavor to a wide variety of foods including baked goods, beverages, cereals, meats, seafood, poultry and dairy products. The applications for phosphates are limitless. Innophos is dedicated to introducing new products, which set industry standards for quality and functionality. Innovate with phosphate.

- Tricalcium Phosphate, NF/FCC - Ideal for multiple applications including cheese, bars, yogurt, orange juice
- VersaCAL® MP - Micronized Tricalcium Phosphate, ideal for soy and milk beverages

- VersaCAL® Clear - Specially formulated for clear beverages, ideal for all beverages. Excellent source of calcium and phosphorus, both essential for good bone health
- Dicalcium Phosphate, Anhydrous - Ideal for use in a wide range of nutritional applications
- Dicalcium Phosphate, Dihydrate - Ideal for use in a wide range of nutritional applications

For more information, contact:

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259 Prospect Plains Road, Building G
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www.innophos.com

Innophos

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2007 SSE Show Supplier Profiles

InterHealth Nutraceuticals, Inc.

InterHealth Nutraceuticals, Inc. researches, develops, manufactures and distributes proprietary nutritional ingredients, which are sold worldwide to manufacturers of dietary supplements and functional foods and beverages.

Celebrating its 20th anniversary this year, the company is known for its unique, high-quality ingredients and science-based research program. InterHealth sponsors research on its products at leading universities; this research is presented at national and international scientific conferences or published in peer-reviewed scientific journals. InterHealth's ingredients are based on strong intellectual property, which includes more than 80 patents and patents pending in the U.S. and worldwide.

Products for Weight Management, Insulin Function and Cardiovascular Health

Two of InterHealth's flagship ingredients, **Super CitriMax®** and **ChromeMate®**, are patented and uniquely positioned with GRAS status and ideal for use in functional foods and beverages as well as in dietary supplements. Both ingredients are clinically proven safe and effective for use in weight management, insulin function and cardiovascular formulations. They are highly soluble and virtually tasteless, odorless and colorless, making them an excellent choice for inclusion in a wide variety of products such as water, fruit juices, dairy products, sachets and nutritional bars.

For more information, contact:
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InterHealth Nutraceuticals, Inc.
5451 Industrial Way
Benicia, CA 94510
800- 783-4636 – Toll Free within USA
707-751-2800 – Main phone
707-751-2801 – Fax
www.interhealthusa.com

InterHealth

J. R. Short Milling Co.

Transforming Natural Grains Into Functional Food Ingredients. Imagine. Inquire. Innovate. Bring your new products ideas to J. R. Short for pre-formed snack pellets and specialty grain products for virtually every segment of the food industry. Using state-of-the-art technology to develop innovative solutions for proprietary formulations, J.R. Short is one of the world's premier producers of specialty grain products.

SUNLITE™ Whole Grain Goodness in Unique Snack Pellet Forms

- **Snack Pellet Whole Grain Twists**
- **Snack Pellet Multi-Grain Triangles**
- **Snack Pellet Corn Twists**
- **Snack Pellet Corn Shells**
- **Snack Pellet Soy "Split Pea" Shape**
- **Snack Pellet Rings**
- **Snack Pellet Multi-Grain Square Tubes**
- **Snack Pellet Button Links**

J. R. Short Customized Specialty Grain Products

- **Stabilized Corn & Wheat Bran**
- **Stabilized Corn & Wheat Germ**
- **CERATEX® Corn Flour & Meal**
- **CERATEX® Confectioners Corn Flakes**
- **AREPA Corn Meals**
- **READIFLAKES Brewers Corn Flakes**

J.R. SHORT Milling Company

For more information, contact:
J. R. Short Milling Co.
1580 Grinnell Road
Kankakee, IL 60901
800-544-8734 FAX: 815-937-8806
E-mail: Info@ShortMill.com
www.Short.Mill.com

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Kraft Food Ingredients Corp.

Developed by Kraft Food Ingredients Corp., **Pan Drippings Flavors** is a line of home-style flavors that embodies the aromatic, mouthwatering flavor of meat pan drippings. Pan Drippings Flavors are free-flowing powders, kosher certified and available in several meat protein flavors, including:

- **Chicken Pan Drippings Flavor** captures the special, comforting flavor of home-style roasted chicken. Available with or without sage flavor notes, the original Chicken Pan Drippings Flavor adds an authentic, fatty chicken flavor making it a perfect solution for home-style applications.
- With its classic roast beef flavor, **Beef Pan Drippings Flavor** enhances beef character in beef-containing applications, improves the flavor of lower cost cuts of beef and helps minimize warmed-over flavor.

For product specifications and samples of Kraft Food Ingredients' Pan Drippings Flavors, please call Todd Hrubes 901-381-6533 or visit www.kraftfoodingredients.com.

KRAFT
KRAFT FOOD INGREDIENTS

Lonza Inc.

Products: Kosher Non-GMO food emulsifiers, glycerol and polyglycerol esters, sorbitan esters and polysorbates. Lonza also offers nutritional products such as L-Carnipure® Crystalline (GRAS), L-Carnipure®L-Tartrate (GRAS; U.S. Patent 5,073,376 and other international patents), as well as Niacin/Niacinamide and FiberAid® (Larch Arabinogalactan).

Description: Lonza produces a broad range of emulsifiers and additives for food applications including Non-GMO Polysorbates. L-Carnipure® Crystalline and L-Carnipure® L-Tartrate from Lonza are GRAS for use in certain conventional foods as a dietary source of L-Carnitine. This vitamin-like substance enables the generation of energy from fat.

Lonza's Larch Arabinogalactanisa naturally occurring water soluble polysaccharide from native Larch trees. FiberAid® is produced exclusively by Lonza using a patented water-based, solvent-free manufacturing process. FiberAid®is a soluble prebiotics fiber that has a beneficial impact on the gastrointestinal system. FiberAid®'s beneficial properties such as high solubility, pH/temperature stability, and low sensory impact make it easy to formulate into a wide variety of applications. FiberAid® is certified Kosher and GRAS affirmed for foods and dietary supplements without limitations.

For more information, contact:

Thomas Brancato
Head of NAFTA Sales & Marketing – Nutrition Portfolio
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Fax: 201-785-1364
Email: tom.brancato@lonza.com
www.lonza.com
www.carnipure.com

Lonza

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2007 SSE Show Supplier Profiles

Martek Biosciences Corporation

Martek Biosciences Corporation is a leading innovator in the development of nutritional products that promote health and wellness through every stage of life. Martek has become a leader in fermentation technology and is an innovator in the research and development of products derived from microalgae.

Martek produces *life'sDHA*™, a sustainable and vegetarian source of DHA omega-3, for use in foods, beverages, infant formula, and supplements, and ARA (arachidonic acid), an omega-6 fatty acid, for use in infant formula. Both DHA and ARA are important nutrients for optimal infant development, while DHA has health benefits that extend through every stage of life.

For more information, contact:
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Martek Biosciences Corp.
Food & Beverage Division
6480 Dobbin Road
Columbia, MD 21045
Phone: 1-800-662-6339
Fax: 410-740-9829
E-mail: foodinfo@martek.com
Website: www.lifesDHA.com

life's DHA™
HEALTHY • BRAIN • EYES • HEART

Natraceutical Group

The Natraceutical Group Ingredient Division is composed of three different specialized companies: Natraceutical, the Spanish expert in functional cocoa derivatives; Overseal, based in England and a producer of Natural Colors, Dried Yeasts, and Talin®; Obipektin AG, a Swiss manufacturer of Pectin, Tomato Powder, and Fruit and Vegetable Powders. The Group combines Health, Taste, and Color to provide our customers with innovative solutions.

Ingredient Highlights
The CocoanOX Range represents the latest in healthy cocoa innovation. The range is currently available in two versions: CocoanOX 12%, a cocoa powder, and CocoanOX 45%, a cocoa extract. Both extracts have a high concentration of total cocoa polyphenols (shown as a %), which have been demonstrated to be bioavailable and work to combat cell damage from oxidative stress *in vivo*. CocoanOX is the perfect ingredient to add the healthy effects of cocoa polyphenols, which have been associated with a healthy cardiovascular system.

Talin® is the brand name for Thaumatin, a natural flavoring component. It is made from a protein extracted from the Katemfe fruit, harvested in the West African rainforests. This multi-functional ingredient can act as a sweetener, a flavor enhancer or a bitterness masking agent in a variety of food, beverage and pharmaceutical applications.

For more information, contact:
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Spain
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Fax: +34 963 353 255
Info@natraceuticalgroup.com
www.natracetuicalgroup.com

natraceutical group

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P&G Food Ingredients

P&G Food Ingredients offers a full line of functional ingredients which allows formulators to create great tasting, better-for-you products with true benefits. P&G Food Ingredients is tapping into our company's expertise and capabilities to take corporate technology and expand it into customer brands. Our advances in lipid technology enable us to help provide our customers healthy solutions.

Our offerings include:
Omegaphyl™ Omega-3 Fatty Acids – concentrated EPA and DHA triglycerides with outstanding organoleptic properties
Nutraphyl® Phytosterols – plant-derived sterols that are proven to lower blood cholesterol
Olean® – a no-fat cooking oil with the full-fat flavor
Capriphyl™ MCTs (in Europe only) – a readily available source of energy
Superol® Glycerin – highly-versatile humectant and sweetener from the world's leading supplier

For more information about P&G Food Ingredients, visit our newly launched Web site at www.pgfoodingredients.com.

For more information, contact:
P&G Food Ingredients
11530 Reed Hartman Highway
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Phone: 1-800-477-8899
Fax: 513-626-3145
E-mail: chemcialsinfo.im@pg.com
Web: www.pgfoodingredients.com

P&G Food Ingredients
Healthier choices, healthy lives.

P. L. Thomas & Co, Inc.

Where Food and Health Meet™
SupplySide East - Booth 1413
PLT highlights exciting new products for food/functional foods applications:

Where Food and Health meet...

Tomat-O-Red® from LycoRed - natural red color with lycopene. A vegetarian product which is free from cochineal (insect extract) for natural 'clean label' products.

Rosemary Extracts – INOLENS™ and VivOX™ – powerful antioxidant and natural preservatives. For both water soluble and oil soluble applications.

Ceambloom 3240 from CEAMSA – gelatin-free specialty carrageenan, ideal for use in vegetarian products.

Superior water-soluble extracts of both fruit and botanical origin, including Pomegranate40p™, Acai, Stevia*suave*, and many more.

Phosphatidylserine
This self-affirmed GRAS ingredient has been shown to reduce the risk of cognitive dysfunction in the elderly and may reduce the risk of dementia in the elderly. This product has a qualified FDA health claim, is natural and can be used in a variety of applications. Phosphatidyserine comprises between 10% and 20% of the brain's cell membrane phospholipid. Part of the aging process is associated with lower levels of phosphatidyl serine with the resultant need for re-establishing the levels for improved cognitive function.

MenaQ7™ - Natural Vitamin K2
Natural Vitamin K2 Menaquinone-7 has been shown in laboratory experiments, studies and clinical trials to be effective in preventing bone loss, promoting bone integrity, significantly reducing the incidence of arterial calcification and promoting cardiovascular health. Only Natural Vitamin K2 consumption has been linked to the inhibition of arterial calcification.

For more information, contact:
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plt@plthomas.com
973-984-0999
www.plthomas.com

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2007 SSE Show Supplier Profiles

Pharmachem Laboratories, Inc.

Pharmachem Laboratories, Inc., a leading developer and manufacturer of a variety of high-quality, efficacious ingredients for the dietary supplement and food industries, introduces its newest ingredient for food and beverage products –StarchLite®.

StarchLite®, an all-natural ingredient, has been shown in clinical studies to delay the digestion and absorption of carbohydrates; and reduce the Glycemic Index (GI) and caloric impact of starchy foods. Furthermore, StarchLite® does not negatively affect the taste or texture of food.

A study commissioned by Pharmachem at UCLA's Center for Human Nutrition, under the direction of Dr. K. Udani, constructed recipes for various baked goods including breads, tortillas and pizza crusts using the StarchLite® ingredient. Sensory evaluations performed on those products by Tragon Corp., an independent research firm, showed that baked goods containing StarchLite® compared favorably to traditional baked goods—and in some cases, were preferred over the traditional products.

StarchLite® can be formulated into a variety of food and beverage products, including cereals, frozen foods, packaged meals, calorie control snacks, pasta, pizza crust, soups and confectionary. The possibilities are endless!

Pharmachem has four processing and manufacturing facilities in Northern New Jersey. In addition, Pharmachem also owns American Ingredients, Anaheim, CA, Avoca, Inc., Merry Hill, NC, and MPT, Inc., Paterson, NJ.

For more information, contact:
Gregory Drew
265 Harrison Avenue
Kearny, NJ 07032
800-526-0609
www.pharmachemlabs.com

PHARMACHEM LABORATORIES

StarchLite® Real food, less calories

PURAC America

In your search for natural ingredients turn to PURAC America, a leading food ingredient company that specializes in the highest quality natural lactic acid, lactates and gluconates. PURAC's expertise in the food industry allows processors to utilize our highly skilled technical team to help strategically navigate successful new product introductions in the food and beverage industries. PURAC focuses on reducing the product development cycle to increase speed to market while decreasing costs.

PURAC Ingredients Key Functions:
- Acidulant
- pH Regulation
- Shelf Life Extension
- Improved Food Safety
- Pathogen Control
- Flavor Enhancement
- Mineral Enrichment

Main Application Areas:
- Meat, Poultry and Fish
- Prepared Foods
- Functional Foods and Beverages
- Refrigerated Foods
- Dressings and Sauces
- Snack Foods
- Seasoning Blends
- Confectionary
- Vitamin and Mineral Supplements

PURAC is represented in more than 100 countries with its network of sales representatives. A new production facility in Thailand helps PURAC more effectively serve the Asian market, joining facilities in the US, Brazil, Spain and The Netherlands. PURAC strives to continuously improve customer satisfaction and be the SOURCE YOU CAN DEPEND ON.

PURAC THE SOURCE YOU CAN DEPEND ON

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Puratos

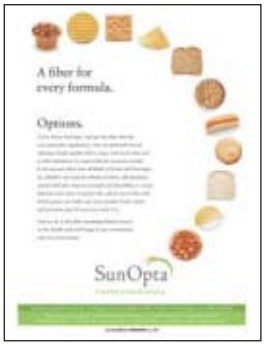
Puratos is committed to being your reliable partner in innovation. Our passion is to help bakers, pastry chefs, and chocolatiers be successful in their business. We work side by side with our customers to develop original and innovative ingredients, technologies, and solutions. Our Puratos companies, combined with a network of independent distributors, allow us to serve you nation-wide.

For more information, contact:
Puratos
1941 Old Cuthbert Road
Cherry Hill, NJ 08034
Ph: (856) 428-4300
Fax: (856) 428-2939
Kathryn Power
infous@puratos.com
www.puratos.us

Puratos
Reliable partners in innovation

SunOpta Ingredients Group

Products: World's largest producer of Oat Fiber. Also offers Other Fibers (Soy/Organic), Stabilized Brans (Oat/Wheat/Corn), Stabilized Wheat Germ, Cellulose Gel, Ingredient Systems, Specialty Starches, Acid Whey, and Dry Sweeteners (Honey/Molasses). In addition we offer a broad range of Contract Manufacturing Services (Dry Blending,Evaporation,Fermentation, Grinding, Instantizing, Liquid Mixing & Processing, and Separation & Filtration).



Applications:
Fibers (Oat/SoyOrganic): Very versatile ingredients that can enhance food and beverage products by adding additional nutritional and functional benefits.
Stabilized Brans (Oat/Wheat/Corn): Extend pre-bake shelf life, reduce calorie content, enrich nutritional content.
Wheat Germ: Ideal for Whole Grain and Fiber enriched foods/beverages.
Ingredient Systems: Our specialty starches and stabilizers provide excellent functionality in dairy/non-dairy (soy, rice) based products.
Dry Sweeteners (Honey/Molasses): For various foods.
Grade A Acid Whey: Add acidic flavor notes in a cost effective whey form.
Cellulose Gel: Improve texture, mouth feel and freeze/thaw stability.
Contract Manufacturing: Please stop by to discuss our capabilities.

For more information, contact:
Customer Service
SunOpta Ingredients Group
25 Wiggins Avenue
Bedford, MA 01730
Toll Free: 1.800.353.6782
Tel: 1.781.276.5100
Fax: 1.781.276.5125
SOICustomerService@SunOpta.com
Website: www.sunopta.com

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Univar Food Ingredients

Start your next innovation with Univar. We have the portfolio of food ingredients and technical tools to simplify your research and development efforts. The Univar Food Function Library is a selection guide by function to broaden your ingredient options and provide the latest news in product features to meet the current trends in food formulation.

Univar has a technical sales team and distribution centers throughout North America to simplify your business. We are delivering FRESH IDEAS in food ingredients by offering products for the latest trends: SUGAR REDUCTION with Univar Aspartame and Sweetener Solutions LLC blended sweetener products and TEXTURE MODIFICATION with the unique line of hydrocolloids by CP Kelco. Our newest portfolio additions include GUM ACACIA from CNI, a leader in NATURAL SOLUBLE FIBER and a NEW UNIVAR FUNCTION LIBRARY TOOL for selecting Natural ingredients.

The Fresh Ideas start here!

fresh ideas
Univar Food Ingredients

For more information, contact:
Univar USA Inc.
17425 NE Union Hill Road
Redmond, WA 98052
www.univarusa.com
foodingredients@univarusa.com

Wixon, Inc.

Wixon: 100 Years and We're Just Getting Started …
For 100 years, Wixon has produced high-quality food and beverage spices, flavorings and seasonings. Its R&D center, specialty food plant, and packaging plant, give Wixon capabilities to create, formulate, flavor, blend, design packaging and package products at one location. With these facilities, Wixon became one of few companies nationwide to create food products from concept to consumption. The past decade, Wixon introduced Mag-nifique™ flavor modifiers, the Wix-Fresh™ product portfolio, and salt substitute, KCLean Salt.

Wixon's seasonings offer dry blends for processed meats, processed foods, rubs, marinades and topical applications. Its food technologists and applications specialists create distinctive seasonings for new offerings or improve an existing product's profile.

Mag-nifique™ natural flavor modifiers improve common sensory problems, at low usage levels, without impacting critical label claims or ingredient statements. They are valuable by making healthy food taste better and by reducing off notes from high intensity sweetness, suppressing bitterness and combating excess saltiness, while maximizing flavor.

Wix-Fresh™ protein products inhibit oxidation, reduce warmed-over flavor of pre-cooked meats; reduce off-notes associated with lactates and diacetates; mask iron, liver and metallic notes typically found in imported meats, enhance overall savory notes, and increase salt perception.

For more information, contact:
Wixon, Inc.
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414-769-3000
414-769-3024 fax
www.wixon.com

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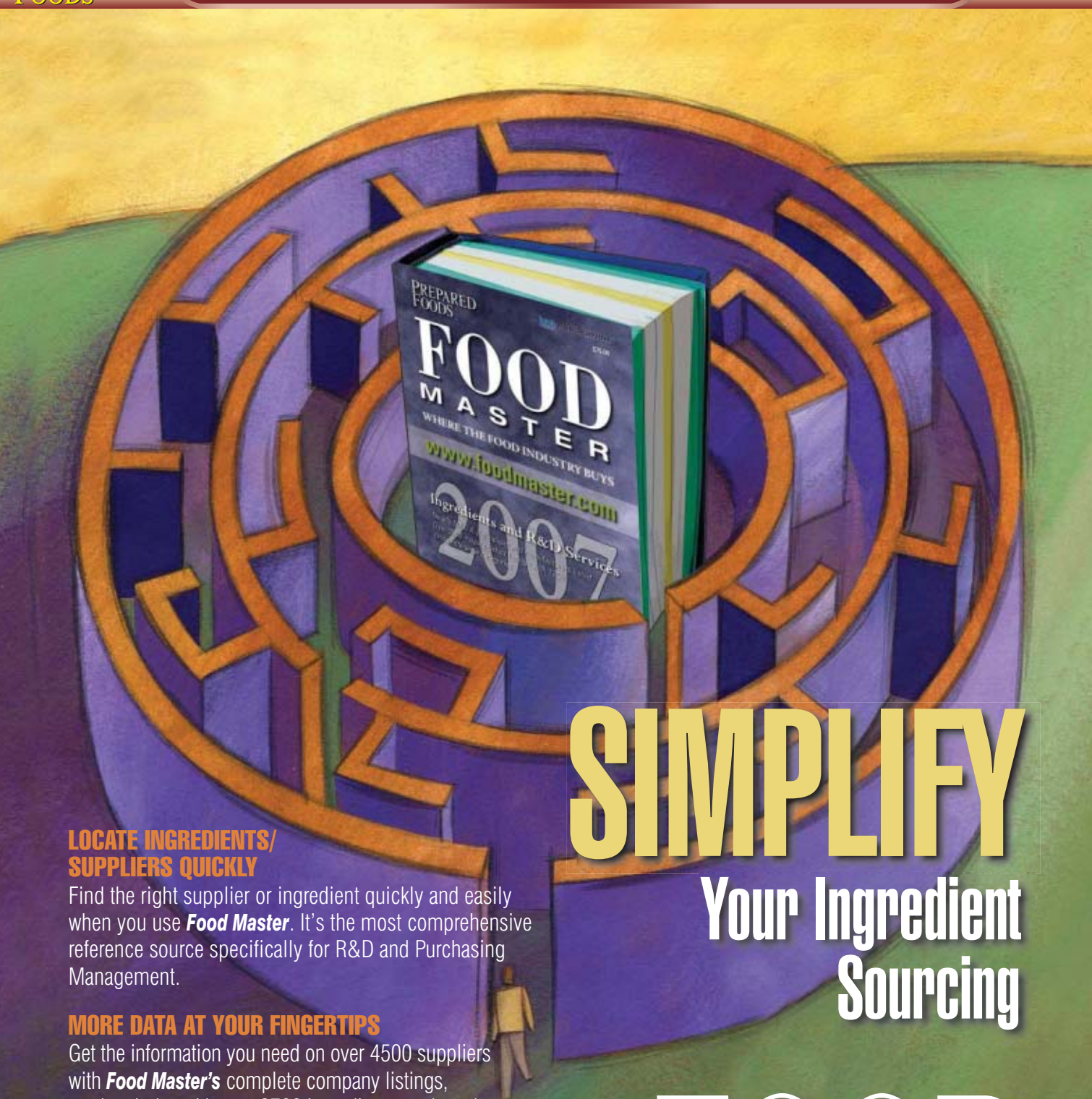

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The **2007 R&D Applications Seminar** is a technical, "how to" event designed to help further educate bench-level R&D on practical solutions to specific application challenges. Join hundreds of your fellow formulators as they switch tracks to attend any of the 100 individual technical sessions.

Don't miss the new Applications Lab Track, which will feature the use of product samples to more effectively demonstrate an ingredient's functionality, or its application in a finished consumer product or model system.

Registration for 2007 is limited to 350 attendees to ensure an optimum learning environment. Bring the whole team and save with our Team Discount. Register at www.PreparedFoods.com/rd

Monday, Sept. 17, 2007: Applications Challenges

A complete list of presentations as of 3/13/2007. Subject to change.

TRACK: PROCESSED MEATS

8:30-9:10 a.m. **Choosing the Right Enzyme for Your Marinade/Tenderizing System**
Speaker: Peter Moodie, Director Sales & Marketing, Enzyme Development Corporation

9:15-9:55 a.m. **Use of Antimicrobials and Antioxidants in Food Products**
Speaker: David Grex, IsoStat Division, Technical Sales Manager, Newly Weds Foods Inc.

TRACK: BAKED GOODS

8:30-9:10 a.m. **Chemical Leaveners in Bakery Applications**
Speaker: EB Russell, Technical Manager, Budenheim

9:15-9:55 a.m. **Flavoring Bakery Products**
Speaker: Agneta Weisz, Vice President Research & Development, Comax Flavors

10:30-11:10 a.m. **Functional Fibers for Grain Products**
Speaker: Jit Ang, EVP, Research & Development, International Fiber Corp.

11:15-11:55 a.m. **Naturally Stabilized Omega 3 Flax System**
Speaker: Mary Ekman, General Manager – USA, Pizzey's Milling USA

1:00-1:40 p.m. **Extending and/or Replacing Fruit with Flavored Particulates**
Speaker: Elaine Hoehn, Manager R&D, SensoryEffects (A PCI Food Ingredients Business)

TRACK: SAUCES & MARINADES

8:30-9:10 a.m. **Winning Sauces with Thermal Gelling Hydrocolloids**
Speaker: Mary Jean Cash, Senior Staff Scientist, Aqualon Division of Hercules Inc.

9:15-9:55 a.m. **Hydration of Water Soluble Polymers**
Speaker: Ross Clark, Distinguished Research Fellow, CP Kelco

TRACK: INGREDIENTS FOR ALLERGEN-FREE FORMULATIONS

8:30-9:10 a.m. **Better Gluten-Free Products Using Specialty Starch**
Speaker: Eric Shinsato, Technical Sales Support Manager, Corn Products International Inc.

TRACK: SPORTS & ENERGY DRINKS

1:00-1:40 p.m. **Fortifying Beverage Profits via Whey Protein Fortification**
Speaker: Starla Paulsen, Applications Department Manager, Glanbia Nutritionals

1:45-2:25 p.m. **Keep Going: Formulating Foods & Beverages for Sustained Energy**
Speaker: Marion Dalacker, Director, Market Strategies, WILD Flavors Inc.

TRACK : REGULATIONS

8:30-9:10 a.m. **Food Labelling Challenges: A Global Perpsective**
Speaker: Jean Theiss, Director, Regulatory and Technical Information Systems, Newly Weds Foods Inc.

Register Online at www.PreparedFoods.com/rd

85% of 2006 R&D Attendees were extremely pleased with Seminar Session topics and the technical level of the presentations.

Network and share ideas
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Monday, Sept. 17, 2007: Applications Challenges

A complete list of presentations as of 3/13/2007. Subject to change.

TRACK: NEW EMERGING INGREDIENTS

1:00-1:40 p.m. **Nutritional and Functional Benefits of Okara in Various Food Systems**
Speaker: Melanie T. Dineen, Applications Technologist, SunOpta Ingredients Group

1:45-2:25 p.m. **Modified Gum Acacia: A Potential Replacer for Gum Arabic and Modified Food Starch**
Speaker: Nabil Naouli, Principal Scientist, TIC Gums Inc.

2:30-3:10 p.m. **Plan Your Oils Future Today: Formulating with Enhanced Soybean Oils**
Speaker: Richard Galloway, President, Galloway & Associates for United Soybean Board

TRACK: INGREDIENT SYSTEMS FOR WEIGHT MANAGEMENT PRODUCTS

8:30-9:10 a.m. **Innovative Solutions for Formulating Weight and Glycemic Management Products**
Speaker: Cristina Munteanu, Food Applications Specialist, GTC Nutrition

9:15-9:55 a.m. **New Developments in the Applications for a New Proprietary Fractionated White Bean Extract to Reduce Carbohydrate Absorption**
Speaker: Kanak Udani, Consultant, Pharmachem Laboratories Inc.

10:30-11:10 a.m. **Application of Insoluble, Refined Fibers in Weight Management Products**
Speaker: Jon Bodner, Senior Manager – Applications, J. Rettenmaier

11:15-11:55 a.m. **Slowly Digestible Carbohydrates (SDC) for Control Glycemic Index (GI) Foods**
Speaker: Sakharam K. Patil, President, S.K. Patil & Associates

TRACK: HEALTHFUL FORMULATIONS

1:00-1:40 p.m. **Correlating Nutrition and Health with Your Beverage Brand**
Speaker: Jessica Jones-Dille, Industry Trend Manager, WILD Flavors Inc.

1:45-2:25 p.m. **Taste Matters when Creating Healthy Foods: Understanding How Taste Modifiers Work**
Speaker: Mariano Gascon, Flavor Lab Director, Wixon Inc.

2:30-3:10 p.m. **Formulating Functional Foods with Long Chain Omega-3s**
Speaker: Valerie Sanders, Food Applications Scientist, OmegaPure

TRACK: APPLICATION LABS

8:30-9:55 a.m. **Customizing Sensory Attributes via Hydrocolloids**
Speaker: CP Kelco

10:30-11:10 a.m. **"Meat" New Trends with Innovative Phosphates**
Speaker: Gene Brotsky, Sr. Technical Service Representative, Innophos Inc.

11:15-11:55 a.m. **Fortify Beverages "Clear Better" with Calcium Phosphate**
Speaker: Amr Shaheed, Sr. Scientist II, Innophos Inc.

1:00-2:25 p.m. **Dried Plums: Natural Solution To Maintaining Shelf Life**
Speaker: James Degen and Jimmy Keeton, Consultants, Faculty Texas A&M University, California Dried Plum Board.

2:30-3:55 p.m. **Natural Colors in Beverages and Confections**
Speaker: GNT USA Inc.

Tuesday, Sept. 18, 2007: Applications Challenges

A complete list of presentations as of 3/13/2007. Subject to change.

TRACK: PREPARED FOODS

8:30-9:10 a.m. **Industry Trends**
Speaker: Michael R. Buttshaw, National Sales and Marketing Manager, Hormel Specialty Products, Hormel Foods Corporation

9:15-9:55 a.m. **The Functional Advantages of Nutritive Sweeteners and Juice Concentrates**
Speaker: David Ropa, VP Marketing, TJP Market Development

10:30-11:10 a.m. **Prepared Meals Made Healthy by Fortifying with Omega-3**
Speaker: Sharon Spurvey, Director, Technical Services, Ocean Nutrition Canada

TRACK: NUTRITIONAL BEVERAGES & FOODS

8:30-9:10 a.m. **Beverage Flavor Radar**
Speaker: Cara Newkirk, Senior Market Manager, FONA International Inc.

9:15-9:55 a.m. **Innovative Food and Beverage Fortification with Natural Tomato Lycopene**
Speaker: Zohar Nir, VP NPD & Scientific Affairs, LycoRed Ltd. Beer-Sheva Israel

10:30-11:10 a.m. **The Use of Dextrin Soluble Fiber in Healthy Confectionery Products**
Speaker: Tom Parady, Associate Program Coordinator, Food Applications, Roquette America Inc.

TRACK: FLAVORS & FLAVOR ENHANCEMENT

1:00-1:40 p.m. **Acidulant Taste and Flavor Effects**
Speaker: Daniel Sortwell, Senior Food Scientist, Bartek Ingredients Inc.

1:45-2:25 p.m. **Use of Dairy Flavors in Cost Optimization Projects**
Speaker: Marilyn Stieve, Dir of Marketing- Dairy Flavors and Priscilla Reeves, Product Development Manager- Dairy Flavors, Chr. Hansen

2:30-3:10 p.m. **Masking Flavors**
Speaker: Agneta Weisz, Vice President Research & Development, Comax Flavors

TRACK: DAIRY & FROZEN NOVELTY

8:30-9:10 a.m. **Stabilizing Dairy and Soy Drinks with Pectin and other Fruit Fibers**
Speaker: Frank Mattes, Sales Manager, Herbstreith & Fox Inc.

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Tuesday, Sept. 18, 2007: Applications Challenges

A complete list of presentations as of 3/13/2007. Subject to change.

9:15-9:55 a.m. **High Protein Frozen Desserts: Extending the Nutritional Revolution to Frozen Desserts**
Speaker: Phil Rakes, Technical Specialist, Main Street Ingredients

1:00-1:40 p.m. **New Product Development Software for Specific Vertical Markets in the Food and Beverage Industries (Ice Cream/Dairy, Bakery, Beverages)**
Speaker: Ted Pliakos, Vice President-Sales, Advanced Software Designs

TRACK: HEALTHFUL FORMULATIONS

8:30-9:10 a.m. **Formulating with Wheat Proteins**
Speaker: Brook Carson, Technical Product Manager, ADM Milling Co.

9:15-9:55 a.m. **Optimized Combinations of Fibers Used As Nutritional Stabilizers**
Speaker: Sebastien Baray, Technical Manager, Colloides Naturels Inc.

10:30-11:10 a.m. **Creating Customized Formulations for Improved Immune and Digestive Health Using Innovative Ingredient Solutions**
Speaker: Cristina Munteanu, Food Applications Specialist, GTC Nutrition

11:15-11:55 a.m. **Omega-3 Fortification of Products for Children and Women**
Speaker: John Foley, Technical Services, BASF Corporation

1:00-1:40 p.m. **New Nutritional Ingredients for "Healthy Heart" and "Healthy Bones"**
Speaker: Rodger Jonas, National Business Development Manager, P.L. Thomas

2:30-3:10 p.m. **Natural Solution to Coloring Foods**
Speaker: Zohar Nir, VP NPD & Scientific Affairs, LycoRed Ltd. Beer-Sheva Israel

TRACK: NEW EMERGING INGREDIENTS

8:30-9:10 a.m. **Designing Healthful Spray Dried Powdered Emulsified Systems**
Speaker: Joan Haselman, R&D Manager, Diehl Food Ingredients (A PCI Food Ingredients Division)

9:15-9:55 a.m. **Sodium Acid Sulfate**
Speaker: Carl Knueven, Corporate Manager - Product DevelopmentJones-Hamilton Co.

10:30-11:10 a.m. **Natural Ingredients for Preservation of Carotenoids and Related Ingredients**
Speaker: Rodger Jonas, National Business Development Manager, P.L. Thomas

TRACK: BREAKFAST CEREALS, SNACKS & BARS

1:00-1:40 p.m. **Raising the Bar**
Speaker: Robert Hansen, Manager of Technical Services, Briess Malt & Ingredients

TRACK: PRODUCT DEVELOPMENT ADVANCES

8:30-9:10 a.m. **Tools for Effective NPD - People, Products & Processes**
Speaker: Allan Samson, President, ESCA Enterprises Inc.

9:15-9:55 a.m. **Kids Say the Darndest Things! - Incorporating Kids in Product Development**
Speaker: Judy Lindsey, VP & General Manager, Product Dynamics, a division of RQA Inc.

10:30-11:10 a.m. **Research and Development Tax Credits: The Hidden Treasure**
Speaker: Terry Schwartz, Managing Director, RSM McGladrey Inc.

11:15-11:55 a.m. **Utilizing Workflow/Approval Routing to Facilitate the New Product Development Process**
Speaker: Ted Pliakos, Vice President-Sales, Advanced Software Designs

TRACK: CONFECTIONERY & DESSERTS

1:00 – 1:40 p.m. **Non-Animal-Based Replacements for Gelatin**
Speaker: Kevin Johndro, Laboratory Manager, Ingredient Solutions Inc.

1:45-2:25 p.m. **Development of Sugar-Free Grained Mints Using Disaccharide Sugar Alcohols**
Speaker: Philippe Levresse, Project Coordinator - Technology / Applications Development, Roquette America Inc.

TRACK: APPLICATION LABS

8:30-9:55 a.m. **Formulating Foods with DHA Omega-3, the Vegetarian Source of DHA**
Speaker: Ruben Abril, Director, Ingredient Commericalization, Martek Bioscienes

10:30-11:55 a.m. **Innovations in Dressings, Sauces & Dips**
Speaker: TIC Gums

1:00-2:25 p.m. **TBD**
Speaker: National Starch Food Innovation

2:30-3:55 p.m. **Innovative Solutions to Successfully Navigating Current Food Trends, Vegetable Juices**
Speaker: Vegetable Juices

Wednesday, Sept. 19, 2007: Application Labs

A complete list of presentations as of 3/13/2007. Subject to change.

TRACK: APPLICATION LABS

8:00-9:15 a.m. **To be announced.**

8:00-9:15 a.m. **To be announced.**

9:30-10:45 a.m. **Masking of Sweeteners in Beverage Applications.**
Speaker: Takasago

9:30-10:45 a.m. **To be announced.**

11:00-12:15 p.m. **To be announced.**

11:00-12:15 p.m. **To be announced.**

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PART A: SEMINAR FEES

☐ **Individual Registration** **$650.00**

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SPECIAL REQUIREMENTS

If you are physically challenged and/or have special meal requirements, please let us know. _____ _____

PART B: APPLICATIONS LAB SESSIONS

NEW

The Applications Lab sessions provide an interactive venue to further demonstrate an ingredient's functionality or its application in a finished product. There is no additional charge to attend the Lab sessions, however they are limited to 40 attendees per session, on a first-come, first-served basis. Please limit your choices to 3 Lab sessions per person.

I am registering for the following: (choose a maximum of 3)

MONDAY

☐ **8:30-9:55 a.m.**	Customizing Sensory Attributes via Hydrocolloids, CP Kelco
☐ **a. 10:30-11:10 a.m.**	"Meat" New Trends with Innovative Phosphates, Innophos
☐ **b. 11:15-11:55 a.m.**	Fortify Beverages "Clear Better" with Calcium Phosphate, Innophos
☐ **1:00-2:25 p.m.**	Dried Plums...Naturally Extending Food Product Shelf Life, California Dried Plum
☐ **2:30-3:55 p.m.**	Natural Colors in Beverages and Confections, GNT USA, Inc.

TUESDAY

☐ **8:30-9:55 a.m.**	Formulating Foods with Life's Omega-3, the Vegetarian Source of DHA, Martek
☐ **10:30-11:55 a.m.**	Innovations in Dressings, Sauces & Dips, TIC Gums
☐ **1:00-2:25 p.m.**	National Starch Food Innovation
☐ **2:30-3:55 p.m.**	Innovative Solutions to Successfully Navigating Current Food Trends, Vegetable Juices

WEDNESDAY

☐ **8:00-9:15 a.m.**	To be announced.
☐ **8:00-9:15 a.m.**	To be announced.
☐ **9:30-10:45 a.m.**	Masking of Sweeteners in Beverage Applications, Takasago
☐ **9:30-10:45 a.m.**	To be announced.
☐ **11:00-12:15 p.m.**	To be announced.
☐ **11:00-12:15 p.m.**	To be announced.

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AUCTION

AUCTION AUCTION AUCTION

Tengu Company, Inc., 14420 Bloomfield Ave., Santa Fe Springs, CA, May 9th, 2007

This equipment was extremely well maintained and can be used for a myriad of food processing applications. Tengu manufactured meat snack products including jerky and meat snacks.

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Enviro-Pak Screen Washer; **Kemetec** 100XLT One Cage Smokehouse; **Chigiri** Oven Dryer; **(3) Filling Lines**; S.S. Belt Product Feeders; S.S. Bucket Elevators; **Ishida** Scaling Systems, 14 s.s. buckets, two-level, dimpled- buckets; Syntron Magnetic Feeders; **PacMac 9500 & General Packer** GP100 Form Fill & Seal; Ramsey Icore Mdl. 4000 Auto- Check w/Ramsey Scout IIE Metal-Detector, 14" W X 2" H aperture; Ultramark & Diagraph Ink Jet Coders; (2) Asahi A6-2 Labelers; Markem Mdl. 9064 Code Dater; Promark Double Chamber Pkg; Takachiho Pkg Leak Detector; (10) Little David & Preferred Pkg. Box Tapers; Leonard Eng. Pack-Off Conveyor, 30' L X 20" W;

Safeline Metal Detector, 2 head; (7) Thermo Ramsey Icore Scout- IIe Metal Detectors, 16"-18" W X 1"-4" H aperture; (2) Fairbanks & GSE 5000 LB- Floor Scales, 5' X 5'; (5) Fairbanks, Doran & AND- Digital Scales; (2) Yale Stand-On Lifts, Type E,- 2001, 6,000 LB; Yale Stand-On Hand Truck, 2004; Toyota Electric Forklift, triple- mast, 4,500 LB, Type E; Toyota Double Mast Propane- Lifts, 5,000 LB; Cascade Lift Truck Attachment; Wilcat 3000 Maintenance Lift; CE Hand Pallet Jack, 5,500 LB **Atlas Copco** Air Compressor; (2) Lafferty Press. Washers (36) S.S. Vats; (26) 600 LB Vemag Buckets; (5) 400 LB Vemag Buckets; (11) Misc. S.S. Tables, 2' X 4' & 4' X 8'; S.S. Bucket Wash; (30) Plastic Vats; (100) 48 X 48 Plastic Pallets; (71) Pallet Racking, 2 W X 3 H; (20) Pallet Racking, 2 W X 2 H; (2) Hand Recog. Time Clocks; Bishoman Lift Back Saver; GMC Truck, 18' bed; Check BarliantAuctions.com for complete Lab, Q.C. Shop & all detailed inventory-too much to list.

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AACC International/World Grains Summit: Foods and Beverages 78
Advanced Food Systems 24
Ajinomoto Food Ingredients LLC....74
American Egg Board 25, 104
American Key Food Products 14
Arista Industries, Inc....NS6
Bioenergy Life Science, Inc. NS16, 104
Blendex Custom Blending 52, 105
Blue Diamond Growers 63
Brenntag North America, Inc. 3
Briess Malt & Ingredients Co. 24
California Raisin Marketing Board 26-27, 105
Cargill IFC-1
Cargill Texturizing Solutions 21, 106
Cognis NS2, 106
Colloides Naturels 58
ConAgra Food Ingredients Company/Gilroy Foods 13, 107
Corn Products U.S....6
Danisco Sweeteners 80-81
Eatem Foods 70
Edlong Dairy Flavors 55, 107
Enreco 19
Fancy Foods Show/NASFT 127
Flavor Dynamics, Inc. 23
Flax Canada 2015 Inc. webcast sponsorship....69, 84
Flax Council of Canada ....Supplement
Food Master 22, 117
G. C. Hahn & Co. 12
Garlic Company, The 91
Gold Coast Ingredients 30, 108
Grain Millers, Inc. 66
Grain Processing Corp. 15
Grande Custom Ingredients Group 18
GTC Nutrition Company 2, 108
Gum Technology Corp. 65
Hilmar Ingredients NS8, 109
Hughson Nut, Inc. 16
IFT 2007 Annual Meeting & Food Expo 101
Innophos, Inc. (formerly Rhodia Inc.) NS10, 109
InterHealth Nutraceuticals 34, 110
Islamic Food and Nutrition Council of America 28
J.R. Short Milling Company 20, 110
Jungbunzlauer 83
Kraft Food Ingredients 86, 111
Lonza, Inc. NS12, 111
MAFCO Worldwide Corp. 68
Martek NS11, 112
McClancy Seasoning Co. ....IBC
National Starch Food Innovation 71
NP Analytical Laboratories....NS17
OmegaPure NS7
Overseal/Natraceutical 82, 112
P&G Food Ingredients NS5, 113
P.L. Thomas & Co., Inc. ....113, OBC
Pharmachem Laboratories....67, 114
***Prepared Foods'* E-Learning Center 60, 93**
***Prepared Foods'* New Products Conference 94-97**
***Prepared Foods'* R&D Applications Seminars 118-121**
***Prepared Foods'* Spirit of Innovation Contest 126**
Protient NS15
Purac America, Inc 89, 114
Puratos 72-73, 115
Roquette America, Inc. 76
Roxlor International, LLC 5
San Joaquin Valley Concentrates NS9
Seltzer Nutritional Technologies NS14
Siemer Milling Company 28
SunnyGem....56-57
SunOpta Ingredients....64, 115
Symrise 32
Tree Top, Inc. 29
Univar USA Inc. 85, 116
Wixon, Inc....NS4, 116

Boldfaced companies offer detailed product specification data in the 2007 Food Master to assist you. *PREPARED FOODS*© provides this index as a service to readers. The publisher does not assume any liability for errors or omissions.

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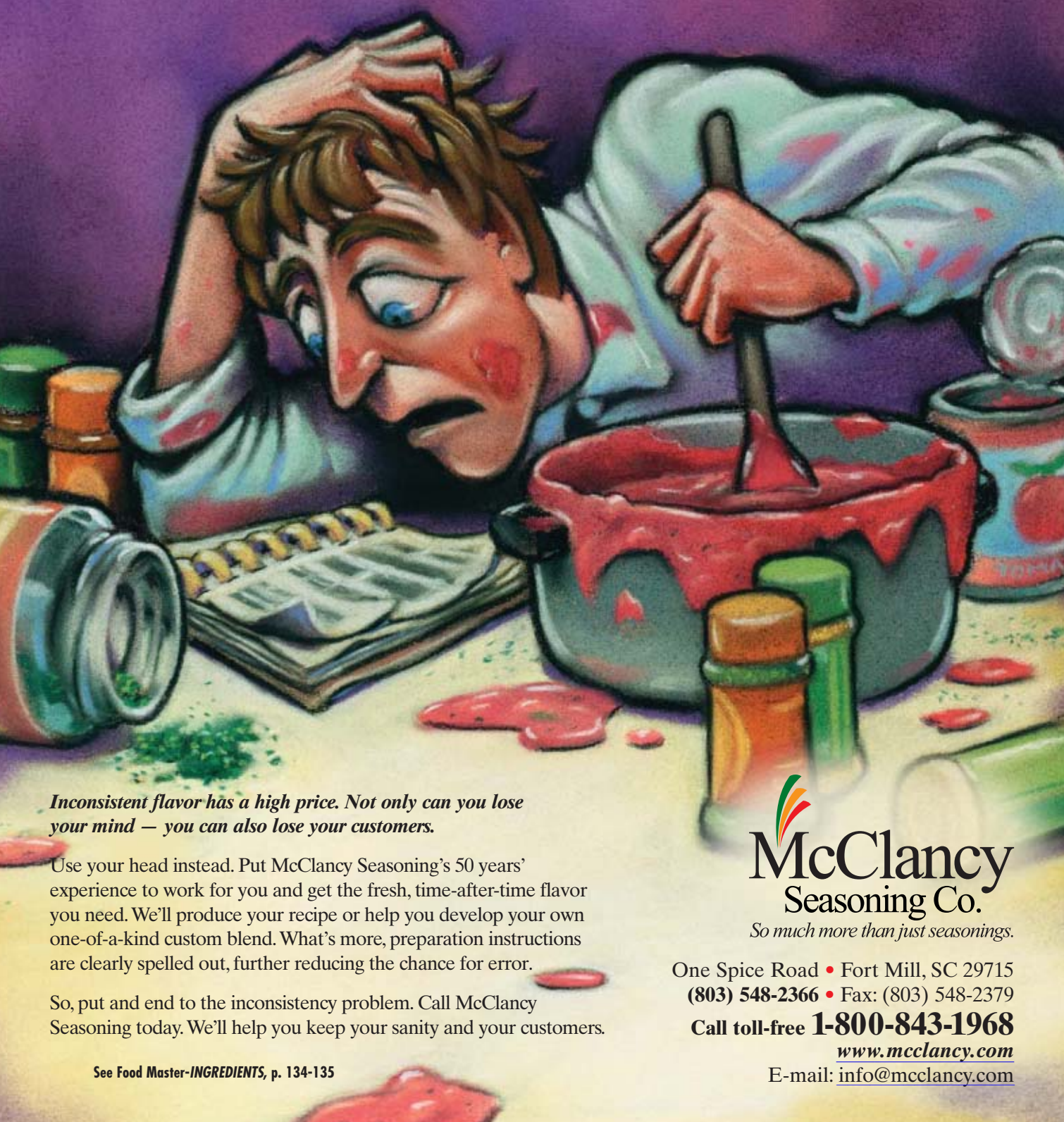

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Flax surges ahead in nutrition industry

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Flax use up as health benefits better realized

By Ann Przybyla Wilkes

Flax has been consumed for centuries—both for its good flavor and for its nutritional properties. In recent years, as people have become more concerned about health, demand for flax in food and beverages, functional foods and dietary supplements has risen dramatically both in the U.S. and other countries.

For example, Mintel's Global New Products Database (GNPD) reports that in 2005, 72 new products were launched in the United States that listed flax or flaxseed as an ingredient. In the first 11 months of 2006, there were 75 new products launched in the U.S. that listed flax or flaxseed as an ingredient.

Scientific research has revealed a range of nutritional benefits derived from flax. However, numerous specific benefits are due specifically to its omega-3 fatty acid, lignan and dietary fiber content. Interest in flax and other omega-3-containing foods heightened further in May 2003 when the White House issued a letter to the U.S. Department of Agriculture (USDA) and the U.S. Food and Drug Administration (FDA) that asked them to promote the intake of omega-3 fatty acids in the diet.

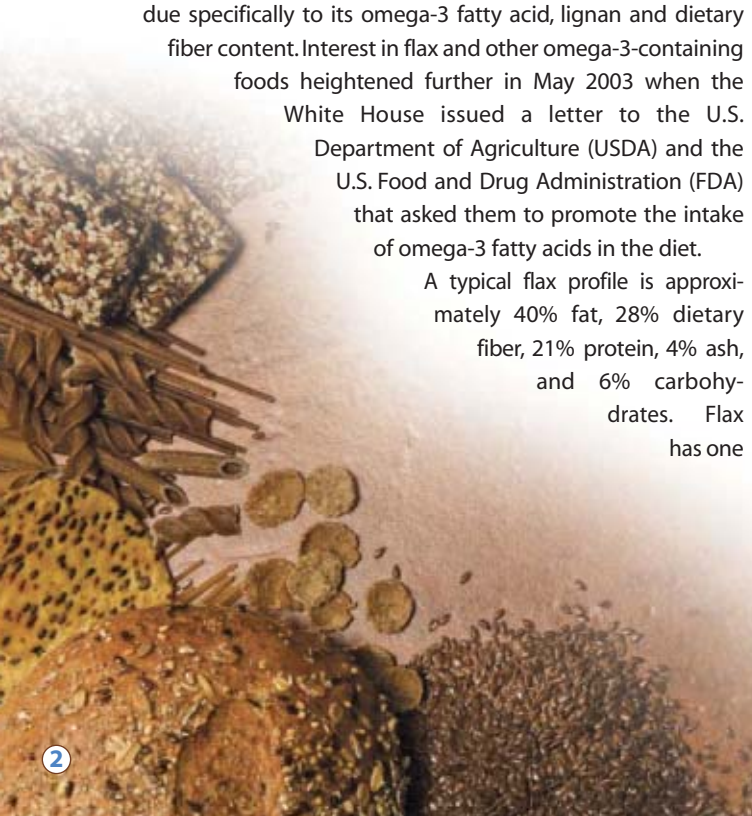
A typical flax profile is approximately 40% fat, 28% dietary fiber, 21% protein, 4% ash, and 6% carbohydrates. Flax has one of the most nutritious plant protein compositions—one that is very similar to that of soybean protein. The nutrient composition of flax also includes a number of important essential minerals and minor amounts of water- and fat-soluble vitamins. One tablespoon of milled flax (also known as ground flax or flax meal) contains the same amount of magnesium as a banana (34mg) and the same amount of potassium as a slice of toasted typical pumpernickel bread (66mg). Vitamin E is primarily present as gamma-tocopherol and functions as an antioxidant.

Omega-3 Fatty Acids

As research has expanded our knowledge of the health benefits of omega-3 fatty acids, consumers have increased their consumption of foods rich in omega-3 oils, such as flax. Flax oil has a very healthy fatty-acid profile, with low levels (approximately 9%) of saturated fat, moderate levels (18%) of monounsaturated fat, and high concentrations (73%) of polyunsaturated fatty acids (PUFAs). The PUFA content comprises about 16% omega-6 fatty acids, primarily as linoleic acid (LA), and 57% alpha-linolenic acid (ALA), an omega-3 fatty acid.

Both LA and ALA are essential fatty acids (EFAs) since they cannot be produced by the body and must come from the diet. ALA is converted in the body to eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), omega-3 fatty acids[1,2]. EPA and DHA are also found in nature, primarily in fish oil. LA is converted in the body to arachidonic acid (AA).

AA and EPA are further metabolized to produce hormone-like substances known as eicosanoids that effect physiological functions such as cell growth and division, inflammatory responses, muscle activity, blood pressure, and immune function. Eicosanoids formed from AA are released in the body in response to injury, infection, stress, or



certain diseases. Conversely, eicosanoids derived from EPA may help protect individuals against heart attacks and strokes, as well as certain inflammatory diseases such as arthritis, lupus and asthma.

Since LA and ALA compete with one another for the enzymes responsible for their conversion to AA and EPA, respectively, it is important to have a proper balance of omega-6 and omega-3 fatty acids in the diet. The ratio of omega-6 to omega-3 fatty acids consumed in today's Western society is estimated to be 20 to 30:1[3]. For optimal health, many government and public health authorities recommend increasing omega-3 fatty acids. In fact as early as 1990, Health Canada recommended an omega-6:omega-3 fatty acid dietary ratio of 4:1 to 10:1[4].

The FDA has yet to set an official recommendation for omega-3 fatty acid consumption, although a report on omega-3 fatty acids by the Office of Dietary Supplements, the National Institutes of Health (NIH), notes that most U.S. diets provide more than 10 times as much omega-6 than omega-3 fatty acids, and cautions that individuals should consume more omega-3 and less omega-6 to promote good health. NIH suggests that good sources of ALA are leafy green vegetables, nuts, and vegetable oils such as canola, soy, and especially flax[5].

ALA Improves Heart Health

Cardiovascular disease (CVD) is an area of research where the consumption of ALA appears to show the greatest potential for health benefit, notes Kelley Fitzpatrick, Director of Health and Nutrition with Flax Canada 2015, Winnipeg, Manitoba. This is significant since CVD is the leading cause of death in Canada and the U.S.[6] Of note is the fact that populations of Japan and Crete have the greatest life expectancy in the industrialized world and also consume the highest levels of ALA in the diet in addition to low intakes of saturated fat[7].

This certified organic spaghetti from Hodgson Mill boasts 600mg of omega-3 oils per serving. The whole-grain pasta consists of organic durum whole wheat flour and milled flaxseed.

Numerous intervention studies have shown beneficial effects of ALA on cardiac health. For example, in the Health Professionals Follow-up Study,[8] a 1% increase in ALA intake (expressed as percent of energy) was associated with a 40% reduction in the risk of non-fatal coronary heart disease (CHD). Another major study, the Lyon Diet Heart Study, included participants who had previously survived a myocardial infarction. The experimental group consumed a typical Mediterranean-style diet rich in ALA, whereas the control group consumed a typical Western-type diet low in ALA. Those who consumed the diet rich in ALA had a 75% reduction in non-fatal myocardial infarctions, and a 70% reduction in total death compared to the control group[9].

A number of studies have focused on the health benefits provided specifically by flax. In one of these studies, women who consumed 50g of milled flax a day for four weeks exhibited total blood and LDL-cholesterol ("bad" cholesterol) level reductions of 9% and 18%, respectively[10]. And, a review of studies focusing on flax and ALA[7] concluded that the fatty acid may reduce ventricular fibrillation.

Two ways by which ALA may protect the heart are through improvements in abnormal heart rhythms and a reduction of blood platelet stickiness (thrombosis)[11]. More recently, studies have shown that ALA lowers C-reactive protein (CRP)—an inflammatory biomarker. Lowering blood levels of CRP may be as important as reducing LDL or "bad" cholesterol for the prevention of heart attacks and strokes[12]. Half of all heart attacks and strokes in Canada and the U.S. occur in people with normal cholesterol levels, and 20% of all

events occur in people with no major risk factors.

In one study, a diet high in ALA dramatically decreased CRP in men and women with high cholesterol levels[13]. Additionally, data from the Nurses Health Study demonstrated an inverse association between ALA intake and plasma concentrations of CRP[11].

Epidemiological research has shown cardioprotective effects of ALA despite differences in study populations, length of follow-up, outcomes, and methods of statistically analyzing the study data. Heart protective effects from diets high in ALA come from numerous mechanisms including decreasing lipid and lipoprotein levels and by eliciting vascular anti-inflammatory effects. This research is leading to a consensus that ALA has very beneficial effects in the prevention of cardiovascular disease[14,15].

Quaker expanded its Take Heart line of products to include instant oatmeal with the claims that it supports healthy arteries, removes cholesterol and reduces the risk of high blood pressure. Flaxseed is touted on the back of the box as a "great source of omega-3," as a tool in combating heart disease and as a "rich source of dietary fiber."

At the present time, there is no Recommended Dietary Allowance (RDA) for EFAs in the U.S. However, the National Academy of Sciences' Institute of Medicine (IOM) recommends 1.6g/day of ALA for men and 1.1g/day for women[5]. Health Canada has established a Recommended Nutrient Intake (RNI) for EFAs, specifying the minimum daily intake of ALA should be 0.5% of total energy[4].

Excellent Source of Dietary Fiber

While numerous health benefits are derived from consuming ALA in flax, its dietary fiber content provides additional health benefits. Flax contains approximately 28% dietary fiber. The American Dietetic Association has cited the "significant impact" that fiber can have on the prevention of obesity, cardiovascular disease and type 2 diabetes[16].

Flax has a ratio of soluble to insoluble fiber between 20:80 and 40:60[17]. The insoluble dietary fiber fraction of flax plays an important role in the relief of constipation, improves colon health, and may have protective effects against colon cancer[18]. The soluble dietary fiber fraction of flax is found primarily as mucilage gums, which have been shown to play a role in lowering serum cholesterol levels[18].

The Promise of Lignans

Flax is also rich in lignans, phytochemicals that are showing promise for their potential benefits to both men's and women's health. More specifically, flax lignans are phytoestrogens, which have chemical structures similar to the human hormone estrogen. Despite being much weaker than human estrogens, they can help balance hormone levels in the body. Flax is one of the richest sources of lignans, providing 75 to 800 times higher levels than other plant sources[19]. Lignans and other flax components may also have antioxidant properties and, hence, may reduce the activity of cell-damaging free radicals[20].

The major lignan in flax is seicoisolariciresinol diglucoside, commonly referred to as SDG.

Once ingested, SDG is converted in the colon to enterodiol and enterolactone, which have shown promise in reducing growth of cancerous tumors, especially hormone-sensitive ones such as those of the breast, endometrium and prostate[21]. One such study involved 50 women diagnosed with breast cancer[22]. While waiting for surgery, half the women received muffins containing 25g of milled flax daily while the other half received ordinary muffins. The women who received the flax muffins had slower-growing tumors compared to the other group.

Other benefits of SDG from flax include effectiveness in lowering the onset of both type 1 and 2 forms of diabetes due to its potent antioxidative ability[20,23] and the ability to lower serum cholesterol[24]. Research is also examining lignans' positive effect on prostate health, bone health, hair loss and acne[25].

Regulatory Status of Flax

Flax is consumed worldwide, and individual countries have their own regulations that govern its use. In the U.S., a food additive petition has not yet been submitted to the Food and Drug Administration (FDA) for flax, nor has a formal review of the GRAS status of whole or milled flax been conducted. However, the Generally Recognized As Safe (GRAS) status of flax has been declared by food manufacturers[26] and no objection by the FDA to its use in foods up to 12% has been noted[27].

In the spring of 2006, a letter was submitted, in response to the FDA Draft Guidance: Whole Grains Label Statement, requesting that the agency include flax in its definition of whole grains by several Canadian organizations including the Flax Council of Canada, Flax Canada 2015, Saskatchewan Flax Development Commission and led by Pizzey's Milling, Angusville, Manitoba. In support of the request, the letter stated, "whole grain flaxseed is an oilseed that has comparable nutrients to cereal grains listed by the FDA." Supporting this request was AmeriFlax, Mandan, N.D. If the FDA includes whole-grain flax in the definition of "Whole Grains," it would dramatically increase the usage, predicts Kaye Effertz, Executive Director, AmeriFlax.

The regulatory environment for health claims in the U.S. has evolved towards a lowering of regulatory hurdles starting with the 1990 Nutrition Labeling and Education Act (NLEA).

NLEA defines a health claim as a statement that characterizes the relationship of a substance to a disease or health-related condition. Disease-reduction claims for "soy protein and risk of CHD," "dietary fat and cancer," and "dietary saturated fat and cholesterol, and risk of CHD" are three of the twelve claims currently approved by the FDA.

The FDA Modernization Act (FDAMA) became law in November 1997. It allows the FDA to authorize health claims that are based on the published authoritative statements from U.S. Government agencies. One of the two claims currently in use under FDAMA concerns whole-grain foods and risk of heart disease and certain cancers.

In December 2003, the FDA's Consumer Health Information for Better Nutrition Initiative allowed qualified health claims for both foods and supplements. This allows the use of qualified health claims when there is emerging evidence for a relationship between a food, food component, or dietary supplement and reduced risk of a disease or health-related condition. In September 2004, the FDA approved a qualified health claim for reduced risk of CHD on conventional foods that contain EPA and DHA omega-3 fatty acids. It does not, however, extend to ALA.

Structure/Function Claims for food products describe the effect that a food product has on the normal structure or function of the body. These need not be pre-approved by the FDA, but they must be true and not misleading to the consumer. Products containing flax qualify for Structure/ Function Claims. During the summer of 2006, Quaker Oats, Chicago, Ill., launched an instant hot cereal containing flax under its "Take Heart" brand that includes a Structure/Function claim on its packaging that reads "Now with Omega-3 ALA to Help Support a Healthy Heart!"

When asked about the reasoning behind enhancing Quaker's Take Heart whole-grain oatmeal with whole flax meal, Candace Mueller, spokesperson for Quaker, a unit of PepsiCo Beverages and Foods, explained that since the product already had multiple heart health benefits, offering the benefits of flax was a logical step in the product's evolution.

Barilla's line of PLUS pastas are multi-grain with the package label touting that it is a good source of protein and ALA omega-3. Flax is a key source of the omega-3 lipids.

Formulating with Flax

Whole and milled flax are both rich in dietary fiber, lignans, protein and the essential fatty acid, ALA. For best use, the seeds need to be ground for people to gain the full health benefits, points out Dr. Linda Malcolmson, Director of Special Crops, Oilseeds and Pulses, Canadian International Grains Institute.

Flax seeds are available in brown and yellow varieties and both contain the same nutritional benefits in terms of ALA, lignan, protein and dietary fiber content. While brown flax is more common, some consumers prefer yellow flax for baking, beverages and in juices.

Breakfast just got tastier with Van's Hearty Oats Berry Boost waffles, which feature 1,000mg of omega-3, 4g of fiber, 4g of protein and no cholesterol or trans fat. The product claims to be an "excellent source" of whole grains and contains flaxseed.

Effingham, IL-based Hodgson Mill, which has an extensive line of products containing flax, prefers brown seeds. The company purchases flax from a Canadian supplier that uses a three-step selection process that also involves assuring that the seeds are evenly colored and mature. Hodgson Mill's Executive Vice President Paul Kirby explains that immature seeds turn rancid more quickly. The company's whole wheat pasta with flax was selected by ABC's food editor Sara Moulton to be featured on "Good Morning America" as part of the coverage of the 2004 New York Fancy Food Show.

There are two types of flax oil available—conventional and organic. They differ in the way in which the seeds are grown and in how the oil is extracted. Flax oil results from pressing the oil from the seed, either by mechanical means or extraction with organic solvents. Flax oil provides more ALA (approximately 55-58%) on a per weight basis in comparison to whole or milled seed (approximately 15-18%).

The use of flax oil for frying is not recommended. Once the oil is extracted from the seed, the polyunsaturated fatty acids may undergo thermal oxidation when exposed to high temperatures used in food preparation[28]. This oxidation will give off-flavors and odors to the finished product.

Novel refining techniques are available that produce flax oils which can be added to a range of foods without affecting the flavor profile of the product, explains Fitzpatrick. These techniques include spray-drying flax oil mixed with other ingredients to protect ALA against oxidation, or microencapsulating flax oil.

Whole and milled flax are added to a variety of food products, including rolls, bagels, multi-grain breads, muffins, cereals, pasta, energy bars and dry mixes for pancakes, muffins and waffles. Studies have shown that both the ALA and lignans in flax remain stable under common baking temperatures of 350˚F (178˚C)[29]. In baking, milled flax can be substituted for the fat used in recipes at a ratio of 3:1.

Milled flax also can replace some of the flour in baked goods, although the amount of flour that can be replaced is determined by the desired textural characteristics of the finished product, Malcolmson suggests.

One advantage of flax oil, notes Jennifer Cooper, President, Lead Point Solutions—an American Fork, Utah-based company that provides product development, market research and regulatory assistance for health and functional foods—is flax oil has a pleasant taste. She suggests that flax oil can be used in salad dressings and feels fish oil would not be a good choice.

"As today's active consumers continue to look for foods that have health benefits, you will see more flax in convenient dosage forms, such as bars—especially if flax is granted whole-grain status," Cooper predicts. "There is a real potential for growth of flax usage in this area," she adds.

Consumers Want Nutrition and Taste

Consumers want to eat healthy, but they do not want to sacrifice taste. This desire to eat good-tasting, healthy food is the reason behind the success of Barilla PLUS, explains Weizhi Chen, Vice President of R&D for Barilla USA. Barilla PLUS is a premium, multi-grain pasta that includes flax. It offers consumers balanced nutrition.

The target market for this pasta is people who want to eat healthy. "If our purpose is to really help people become healthier, we need to provide good-tasting products," Chen stresses. The first priority is taste, then nutrition, he adds.

A new product launch starts with a concept, such as a nutritionally-balanced food product that tastes just as good as the same item without the added nutritional ingredients, Chen says. When the concept for Barilla's flax products was tested, it scored extremely well. Then, when consumers tested the actual flax products, 80% said they would purchase them. Fifty percent or higher is considered good, Chen explains.

Quaker's Take Heart oatmeal with omega-3 is also well-received by consumers. Mueller points out that it is one of the leading heart-health foods on the market. Quaker decided to introduce an oatmeal cereal with flax after data indicated that a segment of the more health-conscious consumers already enhanced their oatmeal at home by the addition of flax.

"Importantly, we are using whole flax meal in Quaker Take Heart Instant Oatmeal so that the nutrients of the flaxseed are available for digestion and absorption," Mueller adds.

Another reason for the success of foods and supplements offering health benefits provided by flax was provided by Datamonitor. In its report, "Ten Trends to Watch in Packaged Goods in 2006"[30] Datamonitor suggested the demise of the low-carbohydrate fad has left a wide open market for other health and wellness-related trends to surface. This new product development trend for 2006 was good news for the flax industry.

Flax's popularity has resulted in its use in a wide range of products. In the report[31], "The U.S. Market for Flax Ingredients and Competitive Products," published in spring 2006, TJP Market Development reviewed the categories where flax is making an impact. The report points out that the bakery segment was the first sector to embrace the use of flax in the U.S. and continues to offer the greatest demand. If FDA approves the request to allow flax to be labeled as a whole grain, the category will see enormous growth, suggests the report. Currently, this category is estimated to account for 20.6% of total flaxseed sales into the U.S.

Another category that will see long-term positive sales growth if flax is recognized as a whole grain is the cereal category, which currently accounts for between 8-10% of all flaxseed sales in the U.S., according to TJP Market Development.

While flax is not currently used to a large extent in the dairy sector, given the trend towards using dairy products as "health delivery vehicles," it seems quite likely that flax will continue to make inroads in this category, notes TJP Market Development. One dairy product incorporating flax is Smart Balance® Light Buttery Spread with Flax Oil. This product provides 300mg of omega-3 per serving to achieve a 4:1 ratio of omega-6 to omega-3. In the prepared foods category, flax is found in new products, such as pasta and breakfast cereals.

As the science continues to expand our knowledge of the benefits of flax, sales of products containing it will continue to rise. Flax is a source of ALA omega-3, a source of dietary fiber, protein, antioxidants, and lignans, some of which offer synergistic health benefits. Flax also has almost no digestible or glycemic carbohydrates.

"In all respects, flax offers a model for whole grains or seeds and underscores the recognition given to the nutritional value of "whole grains", "whole seeds" and "whole foods," says Fitzpatrick.

Research into some of flax's health benefits is still in its infancy but it is very promising, suggests Cooper. She predicts that as more clinical research is conducted, we will uncover increased health benefits from flax. These benefits will be discovered as consumers' interest in health continues to rise. People are linking food to wellness more and more, making flax and the benefits it offers a compelling story. Pf

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